

Advancing Bushfire Arson Prevention in Australia

Report from "Collaborating for change: Symposium advancing bushfire arson prevention in Australia", held in Melbourne, 25–26 March, 2010

A joint initiative of:

THE AUSTRALIAN BUSHFIRE ARSON PREVENTION INITIATIVE

Australian Government
Australian Institute of Criminology

Supported by:

RACV

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MSI Report 10/3, June 2010

MONASH University | Monash Sustainability Institute

Collaborating for change: Symposium advancing bushfire arson prevention in Australia was a joint initiative of the Australian Bushfire Arson Prevention Initiative and the Australian Institute of Criminology. It was hosted by the Monash Sustainability Institute.

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The Australian Bushfire Arson Prevention Initiative is a partnership of the Monash Sustainability Institute, the Monash Centre for Forensic Behavioural Science and Bond University, established with funding from RACV Insurance, which aims to advance national action on bushfire arson prevention.

Report Produced by the Monash Sustainability Institute
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June 2010

ISBN: 978-0-9806387-6-9

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Editors:
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To be cited as: Stanley, J. and Kestin, T., eds. (2010) "Advancing Bushfire Arson Prevention in Australia: Report from a national symposium, 25–26 March 2010". MSI Report 10/3, Monash Sustainability Institute, Melbourne, Australia.

Copies of the report can be downloaded from the MSI Publications web page: www.monash.edu/research/sustainability-institute/publications.html

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Report Summary

Bushfire arson is an intractable and costly problem for Australia. The symposium *Advancing Bushfire Arson Prevention in Australia,* held on 25–26 March 2010, brought together a wide range of stakeholders to identify the gaps in current knowledge and responses to bushfire arson, and determine priorities for addressing them.

Bushfire arson is a complex and multi-faceted issue. While many valuable details can be found in the papers in this report, there are several clear and overarching conclusions that can be drawn from them on how to improve bushfire arson prevention in Australia:

- Bushfire arson differs from structural (building) arson in important ways, including having more varied motives and less knowable consequences. It is important to understand and appreciate these differences for bushfire arson prevention and the management of bushfire arson offenders.
- The priority and resources given to bushfire arson in Australia need to reflect the high costs of dealing with the consequences of this crime and the much lower costs of preventing it from occurring in the first place. This is particularly urgent given the increasing risk of even higher damages in the future as a result of demographic and climate trends.
- There is a lot that can be done to reduce the incidence of bushfire arson in Australia, including addressing the underlying causes, implementing situational and behavioural crime prevention, increasing capture and conviction rates, and treating offenders to prevent recidivism. The earlier the intervention in the life-cycle of the crime, the lower the cost will be; however multiple approaches targeted at each of these intervention points are needed to reduce the incidence of arson.
- Some prevention approaches work better than others or are more effective for particular situations (such as an offender with a particular motivation). An effective – and cost effective – prevention strategy will be based on a combination approaches that are (1) tailored to the local circumstances and the specific situations or types of people that are problematic, and (2) have been shown to work.
- Our current knowledge and understanding of bushfire arson and the effectiveness of existing prevention approaches is insufficient for developing effective bushfire arson prevention strategies. We need to develop this knowledge by improving understanding of the risk factors for bushfire arson and its spatial and temporal patterns, and by evaluating prevention approaches. Research programs to study bushfire arson must therefore form an important part of Australia's response to bushfire arson.
- Better and more accessible data is essential for the development of effective bushfire arson prevention strategies. High quality data is the basis for the development of risk assessment tools and prevention programs, and a means of understanding the cost effectiveness and outcomes of prevention and treatment programs. Data needs to be captured on all relevant fires and arson offenders through resources for more extensive investigation and referral services. Work needs to be done on understanding what data is needed, and how best to standardise, gather and present this information for both operational and knowledge development purposes.
- Bushfire arson requires a multi-agency and inter-disciplinary response. The responsibility for dealing with aspects of bushfire arson falls within the jurisdiction of a variety of national, state, and local agencies. In most cases, no one agency has the responsibility for coordinating bushfire arson prevention, leaving the response fragmented and inefficient. There is goodwill and recognition among people at these agencies of the need to work together on this problem. Forming state-level coordination bodies or committees, with an appropriate mandate and representatives from all relevant stakeholders, was recommended by some symposium participants.

The Australian Bushfire Arson Prevention Initiative, which initiated and co-hosted the symposium, will use these conclusions as the basis for setting the Initiative goals and structuring planning over the next five years.

Preface

Bushfire arson is one of the costliest crimes in Australia. It is thought to be responsible for up to half of all bushfires in Australia – amounting to tens of thousands of fires each year. These fires result in large costs for the community, from loss of life; physical and psychological injury; loss of personal, business and community assets; lost production; and environmental damage. Furthermore, responding to these fires can tie up emergency services, leaving other areas vulnerable.

Despite this, bushfire arson is an often overlooked crime, and its prevention receives relatively little attention and resources. Compared with other crimes, we know remarkably little about its patterns of incidence and about its perpetrators and their motivations – and therefore about the best approaches to prevention. What we do know points to a highly complex picture, with fires lit by a range of different 'types' of people and for a range of different reasons.

Currently, the approach to bushfire arson prevention differs among states and territories, among agencies within a state, and in some cases among units within an agency. While some local differences are appropriate, the diversity of approaches reflects the general lack of coordination among agencies and knowledge of which approaches work.

After the Black Saturday bushfires in Victoria on 7 February 2009, some of which were deliberately lit, the Attorney General for Australia developed the *National Work Plan to Reduce Bushfire Arson in Australia*,[*] which aims to create a nationally coordinated approach to bushfire arson prevention. There is still a significant amount of work which needs to be done to develop and evaluate best-practice prevention approaches.

Recognition of the significant task ahead was one of the motivations for the creation of the Australian Bushfire Arson Prevention Initiative – a collaboration of the Monash Sustainability Institute, the Monash Centre for Forensic Behavioural Science and Bond University. The Initiative was established in mid-2009 with seed funding from RACV Insurance (see Appendix C).

Given the complexity of bushfire arson prevention, and the scattered nature of action to prevent it, the Initiative decided that one of its first projects would be a symposium bringing together the wide variety of stakeholders that have a role – or may potentially have a role – in solving this problem.

The symposium, *Advancing Bushfire Arson Prevention in Australia*, was organised in partnership with the Australian Institute of Criminology and took place on 25–26 March 2010 in Melbourne. It was attended by over 110 participants, including representatives from fire, police and emergency-services; forensic and corrections mental health services; community groups; federal and state government agencies; and academic disciplines such as criminology, sustainability, psychology, and law. This is the first time such a diverse gathering has taken place to discuss bushfire arson.

In order to progress bushfire arson prevention in Australia, the symposium aimed to:

- Identify the best practice arson prevention models operating in Australia and internationally
- Identify the gaps and priorities for improving current knowledge and responses, and draw plans for addressing them
- Bring together those working in the bushfire arson prevention field across organisations and disciplines to meet, network and establish working relationships
- Disseminate the outcomes of the symposium, including current knowledge and gaps, to inform the implementation of the *National Action Plan to Reduce Bushfire Arson in Australia* and other bushfire arson prevention initiatives

The first three aims were achieved through two intense days with six plenary presentations providing an overview of bushfire arson in Australia and 17 workshop sessions where participants delved into specific aspects of the problem in detail. The main themes for these presentations and sessions were:

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[*] *National Work Plan to Reduce Bushfire Arson in Australia*, Attorney General's Department 2009, www.ema.gov.au/www/emaweb/emaweb.nsf/Page/Publications_ProgramPublications_NationalWorkPlantoReduceBushfireArsoninAustralia.

- Mental health: Identifying, managing and treating people at risk of committing bushfire arson
- Criminal justice system: Improving multi-agency cooperation for better deterrence, capture and conviction rates of bushfire arsonists
- Community: Identifying communities with high arson potential and improving their resilience
- Risk assessment: Understanding and mitigating the risks of bushfire arson

This report is in fulfilment of the final aim, and provides a summary of the issues raised and the recommendations made during the symposium. It contains a summary paper for each symposium session, as well as a synthesis of the main issues and recommendations arising from them. We hope that the outcomes of the symposium, through this report, will provide the necessary background on why bushfire arson prevention in Australia deserves a much greater response and what the next steps could be.

The Australian Bushfire Arson Prevention Initiative looks forward to working in collaboration with other agencies to facilitate and promote the prevention approach supported in the symposium. The ideas shared in the symposium will provide the basis for the setting of the Initiative goals and structuring planning over the next five years. Potential activities include:

- Establishing a centre which is comprehensive, inclusive, strategic and operational and includes a bottom-up as well as top-down approach
- Running an annual symposium for all stakeholders, with additional smaller specialist workshops
- Developing communication between researchers, practitioners (mental health, police, fire, legal system), government and the community
- Increasing research capacity
- Developing a visiting specialist program to promote knowledge exchange
- Piloting and evaluating prevention programs in communities, and then facilitating a broader roll-out
- Establishing treatment programs for juvenile and adult arson offenders
- Improving mental health services for those at risk of arson offending
- Facilitating the establishment of training programs

We are deeply grateful to our colleagues on the Symposium Organising Committee – Dr Rebekah Doley (Bond University), Dr Troy McEwan (Monash Centre for Forensic Behavioural Sciences), Mr Warwick Jones (Australian Institute of Criminology) and Mr Simon Rowntree (Monash Sustainability Institute) – for the excellent work they did to shape, realise, promote and run this symposium.

We would also like to extend our sincere thanks to the keynote presenters, workshop leaders and panel members, who worked hard to provide interesting and challenging sessions, and who provided summaries of their sessions for this report.

In addition, we would like to thank all participants for extending themselves beyond their immediate area of expertise or interest and for actively sharing their knowledge and ideas in the discussions. Despite the wide variety of disciplinary backgrounds, professional languages and perspectives, the atmosphere at symposium was uniformly open, frank and constructive. This openness was a key factor in making this symposium a thoroughly enjoyable and stimulating event.

A final thankyou goes to the RACV, whose vision and partnership made the development of the Initiative, and therefore this symposium, possible.

The Australian Bushfire Arson Prevention Initiative welcomes any feedback on this report. Further information about the Initiative, including contacts, and the symposium can be found at www.monash.edu/research/sustainability-institute/bushfire-arson/.

Janet Stanley and Tahl Kestin
May 2010

Advancing the Bushfire Arson Prevention Agenda

The symposium *Advancing Bushfire Arson Prevention in Australia* provided a wide-ranging yet detailed examination of the issues associated with bushfire arson prevention and recommendations as to how responses to the problem can be improved. The details can be found in the symposium papers included in this report; this section summarises and synthesises the overarching issues that emerge from these papers, and looks at the broad actions that are needed in order to advance the bushfire arson prevention agenda.

At present the response to this costly crime is very poor: little cohesive prevention work is being undertaken; it is highly likely that the offender will get away with the crime and even if caught, the punishment will be light; and the lack of treatment programs does little to ensure the offender won't re-offend.

It is clear that it is possible to significantly reduce the occurrence of bushfire arson, and pockets of high quality work are already being undertaken. However, there is a need for considerable change to present approaches in order to increase the development of knowledge, improve information interchange and put in place a platform of prevention approaches and programs. In particular, development of prevention approaches needs to be built on a structured evidence-based process with clearly defined outcomes, including the development and sharing of knowledge, improved and uniform data collection, multi-disciplinary and cross-sector approaches, and attendance to all parts of the system. There is a cross-discipline and cross-sector willingness to work together to make significant in-roads into understanding and reducing this crime.

These issues are now discussed in more detail.

Bushfire versus structural arson

Bushfire arson differs from structural (building) arson in important ways, including having more varied motives and less knowable consequences. It is important to understand and appreciate these differences for bushfire arson prevention and the management of bushfire arson offenders.

Although 'arson' is used to describe both deliberately lit bushfire and structural fires, it has become clear that the people who commit these crimes and their reasons for doing so are not necessarily the same – and therefore need to be addressed differently.

Fore example, in the last decade the legal meaning of the word arson has changed to try and encompass the difference in intent between structural and vegetation fires: When somebody sets fire to a building, the intent is to burn that building and it is unlikely that the whole a city will burn down but when somebody sets fire to vegetation the consequences are far less knowable. Arson now has two meanings in law: maliciously damaging of property by fire, which applies mainly to structural arson; and the lighting fires 'reckless as to the consequences', which applies mainly to bushfire arson. Despite the general change in meaning, there are still more than 60 laws in Australia covering bushfire arson, and attempts to create a common legislative framework have largely failed.

Risks versus response

The priority and resources given to bushfire arson in Australia need to reflect the high costs of dealing with the consequences of this crime and the much lower costs of preventing it from occurring in the first place. This is particularly urgent given the increasing risk of even higher damages in the future as a result of demographic and climate trends.

Bushfire arson is a very costly crime for Australia. There are tens of thousands of bushfires and grassfires in Australia every year, up to half of which may be caused by arson. These arson-related fires cause millions of dollars worth in damages – as well as uncounted psychological, social and environmental damage. Further costs are incurred by emergency services to attend these fires, and the criminal justice system to apprehend and convict the offenders.

Despite its costs, bushfire arson receives relatively little attention from governments, communities and the media in Australia. There are several possible reasons for this: Bushfire arson carries the (inaccurate) perception that it is an uncommon crime, as only large or seriously damaging incidents receive much attention. The majority of incidents occur in out-of-the-way rural and urban-fringe areas and are generally 'victimless'. Emergency services rarely have sufficient resources to investigate all suspicious bush and grass fires, so many

instances go unrecorded. The responsibility for preventing the crime and dealing with offenders is spread across a variety of state emergency, criminal justice and correctional services, so no one agency has a clear picture or the mandate to coordinate response to this crime. The seasonality of this crime further complicates the dedication of resources to it. Finally, there is a general (and again inaccurate) perception that, given the dispersed nature of the crime, there is little that can be done to prevent it.

This lack of attention – which has resulted in a low level of resources invested in bushfire arson prevention and a difficulty in getting policy makers and the community to take this issue seriously – is both risky and costly: Every instance of bushfire arson has the potential to become catastrophic, and preventing it from happening is much less costly than dealing with the consequences. So unless we recognise and address the true scale of the bushfire arson problem in Australia we are taking a big gamble.

This is particularly important as issues outside the central concerns of bushfire arson will influence the trends in relation to fire-lighting, fire risks and the ability to prevent arson. Particularly important in these are climate change and rapid population growth in the urban-rural interface. The IPCC Fourth Assessment Report (2007)[*] warns that an increase in fire danger is likely to be associated with a reduced interval between fires, increased fire intensity, a decrease in fire extinguishments and faster fire spread. In south-east Australia, the frequency of very high and extreme fire danger days is likely to rise between 4 and 25 per cent by 2020 and 15 and 70 per cent by 2050.

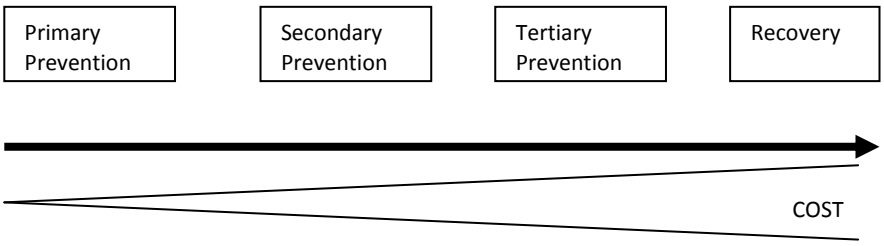
The rapid population growth poses increased risks as urbanisation occurs on the fringes of large cities, often penetrating into forested areas. Rapid growth places at risk the ability to provide comprehensive services to the population, stretching further the already limited mental health services. These peri-urban areas often have poorer job opportunities and fewer transport options, particularly for people with low skills, and youth. The failures of the child protection system intensify the problems of dealing with arson.

Prevention options

There is a lot that can be done to reduce the incidence of bushfire arson in Australia, including addressing the underlying causes, implementing situational and behavioural crime prevention, increasing capture and conviction rates, and treating offenders to prevent recidivism. The earlier the intervention in the life-cycle of the crime, the lower the cost will be; however multiple approaches targeted at each of these intervention points are needed to reduce the incidence of arson.

Prevention can be understood as comprising a range of approaches which target different issues, as shown in Figure 1.

Figure 1: The range of intervention points for bushfire arson prevention.



- **Primary Prevention** is a promotion of a wellness approach, which gives positive messages about health and wellbeing or advises against certain behaviours, such as smoking.
- **Secondary Prevention** targets messages and programs towards groups of people most at risk of engaging in problematic behaviours.

[*] Parry ML, Canziani OF, Palutikof JP, van der Linden PJ, Hanson CE (eds) (2007) IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK.

- **Tertiary Prevention** is directed towards those who have already offended or engaged in the problematic behaviour, to stop re-offending.
- **Recovery and repair** of damage takes place if the event cannot be stopped.

The cost of each of these intervention points increases as the approach moves towards recovery. However presently in Australia, the recovery stage is where most resources and activity are targeted. The exception here is the increased resources which have been moved to one prevention approach – prescribed burning.

Multiple approaches targeted at each of these intervention points are needed in order to reduce the incidence of arson. The symposium highlighted many possible approaches, and examples of some of the responses discussed are given in Table 1. These examples are based on prevention theory and common practice, but more work is needed to ensure their feasibility and potential effectiveness. The effectiveness of different prevention options will be discussed in the next section.

A risk management framework for prevention

Some prevention approaches work better than others or are more effective for particular situations (such as an offender with a particular motivation). An effective – and cost effective – prevention strategy will be based on a combination approaches that are (1) tailored to the local circumstances and the specific situations or types of people that are problematic, and (2) have been shown to work.

As shown in Table 1, there are many potential approaches for bushfire arson prevention. However, not all these approaches are likely to be equally effective, with variation between particular circumstances. Bushfire arson is not a homogeneous crime, as it is committed by different types of offenders for different motivations – for example, juvenile curiosity, juvenile problem behaviour, and arson committed to cover up evidence of crime.

There is therefore no 'one size fits all' approach to bushfire arson prevention; rather we need to identify which responses work best under which circumstances. This risk management framework should ensure that resources and effort are not wasted on applying particular approaches where they do not work or where they are not needed. To apply this framework properly, we need to:

- Understand the behavioural and situational risk factors for different types of arson
- Identify when and where they are most likely to occur and develop
- Develop and evaluate targeted prevention approaches
- Develop risk assessment tools to guide police, fire and correctional services on which approaches to use and when

Understanding bushfire arson

Our current knowledge and understanding of bushfire arson and the effectiveness of existing prevention approaches is insufficient for developing effective bushfire arson prevention strategies. We need to develop this knowledge by improving understanding of the risk factors for bushfire arson and its spatial and temporal patterns, and by evaluating prevention approaches. Research programs to study bushfire arson must therefore form an important part of Australia's response to bushfire arson.

We currently have very little understanding of the causes of bushfire arson and of which strategies are effective in preventing it. This is partially because of lack of data (as discussed below), but because there has been little emphasis until now on developing this knowledge. The little research that has been done – for example on the psychological and offending characteristics of arsonists, the social processes associated with arson, and on regional spatio-temporal patterns of arson incidence – have proved to be of great use to police, fire and correctional services.

Clearly work in this area must be greatly expanded, through sufficient funding, access to relevant data, and partnerships between academic researchers and the agencies that need to use the results. The latter two issues are discussed below.

Table 1: Examples of bushfire arson prevention approaches raised at the symposium. Approaches may need further evaluation to ensure they are appropriate and effective.

Primary Prevention	Secondary Prevention	Tertiary Prevention
Promote healthy family relationships > Provide child development information in the community > Provide relevant and accessible support services and structures to families at risk > Enable early identification of children under stress – for example, by training teachers to recognise the warning signs – and provide accessible and effective services to support and address these issues **Promote & plan healthy, inclusive, vibrant communities in high-risk areas** > Strengthen the major supports in our society – education, health, income support, and transport – through appropriate government policy and planning > Address general factors that lead to high crime rates (e.g., youth unemployment, lack of infrastructure and services) > Provide activities for youth outside school hours > Promote development of communities with greater collective efficacy > Develop community, private or corporate sense of ownership and control of high-risk zones > Incorporate place-based crime prevention strategies into local planning processes > Consider arson risk in the placement and planning of new housing estates in urban-fringe areas **Improve children's understanding of fire and its consequences** > Embed knowledge about fire in the science curriculum **Insurance** > Improve community resilience through actions such as education on adequate insurance coverage for households, businesses and community infrastructure.	**Increase the effort for offenders** > Apply place-based strategies – such as control access, target hardening, screening exits – in high-risk areas: urban-rural fringe, national parks, forest plantations, along access roads/pathways, in and around schools, rubbish bins, dumped cars, etc. **Increase the risk for offenders** > Increase the probability of detection by extending investigation to all bushfires, not just those that cause damage > Alert communities to the high risks associated with bushfire arson and encourage communities to be more vigilant through information campaigns and community partnerships > Develop community cultures that foster reporting, and make it easier for community members to report on suspicious activities through anonymous reporting and ability to report 'concern to police' through clear and supportive reporting channels > Impose lengthier sentences and make bushfire arson offenders easier to convict (e.g., by applying strict liability) > Create registers of arson offenders (similar to sex-offender registers) and conduct post-release monitoring and tracking > Target operations to focus on 'persons of interest' to prevent and disrupt recidivist or serial arsonists > Develop a culture of reporting within fire-fighting agencies by promoting the benefits to the agency of dealing explicitly with fire-fighter arson **Reduce the rewards for offenders** > Identify and treat people at first signs of problem behaviour – before they develop into bushfire arson offenders. Develop appropriate risk assessment methodology and train educators and other mental health services on recognising these individuals. Provide appropriate referral channels and treatment programs to assist these individuals. > Develop screening tools to identify and exclude fire-fighting recruits or volunteers who may have a tendency towards committing arson	**Assess and treat individuals that have engaged in firesetting** > Establish clear referral pathways across jurisdictions to ensure that any individuals engaged in firesetting that come into contact with police, fire services, the corrections system, or the courts, are assessed by trained mental health practitioners to determine the need for treatment > Establish multi-agency and inter-disciplinary case management for firesetters > Develop evidence-based risk-assessment tools for identifying firesetters at increased risk of firesetting and other offending behaviour, and directing these individuals towards appropriate treatment and management processes > Develop specialist materials and training to develop skills/knowledge on bushfire arson assessment and treatment for use by mental health professionals, particularly for those in rural/remote areas > Establish arson clinics to provide specialist intervention for adult and juvenile firesetters > Ensure mandatory treatment and rehabilitation programs for arsonists during time in custody and upon release > Consider, where appropriate, alternative forms of sentencing in conjunction with conventional justice system processes to reduce rates of recidivism and increase victim satisfaction. These include restorative justice conferences between offenders and victims, the community, and other stakeholders; and therapeutic jurisprudence, based on processes used by problem-solving courts, which facilitate offenders addressing issues that have caused the offending

Data issues

Better and more accessible data is essential for the development of effective bushfire arson prevention strategies. High quality data is the basis for the development of risk assessment tools and prevention programs, and as a means of understanding the cost effectiveness and outcomes of prevention and treatment programs. Data needs to be captured on all relevant fires and arson offenders through resources for more extensive investigation and referral services. Work needs to be done on understanding what data is needed, and how best to standardise, gather and present this information for both operational and knowledge development purposes.

It is impossible to develop and implement appropriate bushfire arson prevention strategies without comprehensive data on the incidence of bushfires (e.g., when, where, cause) and about the people who light them (e.g., age, sex, motivation, criminal record). Without this data we cannot understand the different types of bushfire arson and cannot identify behavioural or situational risk factors for targeting prevention programs.

Although there are inherent limitations in our ability to obtain comprehensive data about bushfire arson – for example, not all fires are observed, it's not always possible to determine the cause of a fire and most offenders are not captured – even the data that could be collected is currently fragmented, incomplete, hard to use, or inaccessible. This is because of the significant logistical challenges of collecting and sharing information. As an example, there is little information on the cause of most bushfires as those that cause little damage are not investigated and recorded because of the enormous investigative resources this would require for the tens of thousands of bushfires that occur every year.

Lack of resources is a major, but not the only, challenge to collecting bushfire arson data. Other challenges include:

- Getting national and cross-agency agreement on appropriate and consistent types of data to be collected, definitions of arson-related terms (e.g., "arson") and formats for storing the data.
- Identifying responsibilities for data collection and developing data collection protocols. This would include ensuring that all fires get investigated to some extent and that data is captured on arson offenders who are charged with other crimes, rather than their arson offences.
- Developing national and cross-agency data sharing protocols and arrangements that explicitly deal with issues of privacy, confidentiality, sensitive data, and data ownership to ensure that all stakeholders have access to the data they need to progress bushfire arson prevention.

Multi-agency approaches

Bushfire arson requires a multi-agency and inter-disciplinary response. The responsibility for dealing with aspects of bushfire arson falls within the jurisdiction of a variety of national, state, and local agencies. In most cases, no one agency has the responsibility for coordinating bushfire arson prevention, leaving the response fragmented and inefficient. There is goodwill and recognition among people at these agencies of the need to work together on this problem. Forming state-level coordination bodies or committees, with an appropriate mandate and representatives from all relevant stakeholders, will assist such coordination.

Multiple agencies nationally and in each state deal the bushfire arson problem. They include rural and metropolitan fire services, police services, law courts, correctional services, parole and rehabilitation services, forensic mental health services, schools, federal, state and local governments, private security firms, and academic researchers. All are essential players in developing and delivering bushfire arson prevention programs. However, historically there has been little formal cooperation on this issue in most states and areas, so responses tended to be fragmentary.

Developing better cooperation between stakeholder agencies is an essential but difficult step on the way to more effective bushfire arson prevention. Agencies have their own organisational culture and priorities – and different responsibilities in relation to bushfire arson prevention – making coordination of activities difficult. However, most agencies realise that cooperation is necessary and have good will in furthering it. Cooperation between police and fire-fighters is particularly advanced, through staff secondment and regional coordination committees.

It is also important to develop better sharing of knowledge between practitioner agencies and academic researchers. Academic researchers have the tools and skills to contribute significantly to understanding the

different causes of bushfire arson and for developing, testing and evaluating prevention approaches. However, researchers must work with the relevant agencies in order to be able to access appropriate data and to ensure that the work they are doing fits the practical needs of these agencies.

Given the large number of stakeholders, the need for multiple approaches and the complexities of implementing bushfire arson prevention, a possible solution is to create a single state agency or body that would 'own' the problem. This body would be composed of all the key stakeholders, and would provide oversight and coordination for bushfire prevention activities. This would include data collection, sharing and analysis, development of appropriate assessment and referral pathways for offenders at risk, coordination of on-the-ground prevention efforts, and liaison with academic research to develop and evaluate appropriate prevention programs.

Bushfire versus structural arson

Bushfire arson differs from structural (building) arson in important ways, including having more varied motives and less knowable consequences. It is important to understand and appreciate these differences for bushfire arson prevention and the management of bushfire arson offenders.

Although 'arson' is used to describe both deliberately lit bushfire and structural fires, it has become clear that the people who commit these crimes and their reasons for doing so are not necessarily the same – and therefore need to be addressed differently.

Fore example, in the last decade the legal meaning of the word arson has changed to try and encompass the difference in intent between structural and vegetation fires: When somebody sets fire to a building, the intent is to burn that building and it is unlikely that the whole a city will burn down but when somebody sets fire to vegetation the consequences are far less knowable. Arson now has two meanings in law: maliciously damaging of property by fire, which applies mainly to structural arson; and the lighting fires 'reckless as to the consequences', which applies mainly to bushfire arson. Despite the general change in meaning, there are still more than 60 laws in Australia covering bushfire arson, and attempts to create a common legislative framework have largely failed.

Opening of Bushfire Arson Prevention Symposium

***The Hon. Robert McClelland, MP**, Attorney-General for Australia*

[CHECK AGAINST DELIVERY] [*]

First, may I acknowledge the traditional owners of the land we meet on – and pay my respects to their elders, both past and present.

I would like to thank the staff from the Australian Bushfire Arson Prevention Initiative and the Australian Institute of Criminology for organising this symposium.

Not only have you recognised the national importance of preventing bushfire arson, but you have stepped up and taken on the challenge to help bring about collaboration for change.

There is no doubt that the devastation of the Black Saturday bushfires touched all Australians. Tragically, 173 people lost their lives and more than 2,000 homes were destroyed. Among the sorrow and grieving for these losses, we also had to confront the tragic fact that some of these bushfires had been deliberately lit.

The reality is that bushfire arson does occur—and it is a serious and terrible crime.

The Australian Institute of Criminology has done some excellent research into bushfire arson. As the Institute recently found, some 20,000 to 30,000 vegetation fires are suspected of being deliberately lit. Each year, arson in all its forms is estimated to cost the Australian community approximately $1.6 billion.

Arson is not merely antisocial behaviour. It is a serious crime where the perpetrator shows reckless indifference to the lives and property of their fellow Australians.

Strategies to Combat Arson

Bushfire arson is a difficult crime to combat. There is a lot of good work, but one thing is clear: all stakeholders do need to work better together to more effectively prevent and punish bushfire arson.

Certainly, that was the clear message of the national forum to reduce bushfire arson in Australia, which I chaired in fact on the same day exactly one year ago. This forum, the first of its kind, brought a range of experts together in a national effort to reduce the number of deliberately lit bushfires. The aim was to look at examples of bushfire arson prevention initiatives from around the country, and identify best practice and set national priorities for action. We recognised that the key to reducing and preventing bushfire arson is through maximising communication and cooperation between all key parties.

One year on, I'm pleased to say that the Australian Government has initiated a number of activities to help drive a holistic national approach to bushfire arson. This involves better criminal justice responses; better community education; and better national collaboration.

I want to deal briefly with each of these areas.

Criminal Justice Responses

Law enforcement is one part of effectively combating bushfire arson.

But unfortunately the ability to prosecute a person for death or serious harm caused by arson is limited and it will often be difficult to demonstrate the necessary criminal intention for murder.

Therefore, we believe new offences of causing death or serious harm as a result of bushfire or arson are needed. Arsonists deserve to face the full force of the law; that includes the possibility of murder charges if prosecuting authorities believe such charges are warranted.

The objective of our work in this area is to develop nationally consistent arson and bushfire arson offences that appropriately reflect the gravity of the offence.

We have drafted model laws for stronger, more consistent arson offences with penalties of up to 25 years for bushfire arson causing death or serious harm. The offences are based on the felony murder principle: where a person deliberately lights a fire with reckless indifference to the safety of others, they can be held criminally responsible for death and serious harm that results.

[*] The text of this speech is available online at www.attorneygeneral.gov.au/www/ministers/mcclelland.nsf/Page/Speeches_2010_25March2010-OpeningoftheBushfireArsonPreventionSymposium. An extract of the speak is also available on the Attorney-General's Department YouTube Channel: www.youtube.com/watch?v=BO28jf4xIZs

The Commonwealth is strongly encouraging the States and Territories to implement these model laws.

In addition, I welcome steps taken by the National Judicial College of Australia to provide training to Australia's judicial officers about sentencing in bushfire arson cases. A session for judicial officers on sentencing arsonists was provided at the Colleges' National Sentencing Conference held last month.

Community Education

While prosecuting arsonists is an important deterrent, preventing the arson before it actually occurs is obviously preferable and presents an effective longer-term solution.

There is a lot of good work underway at a State and Territory level. Federally, we are undertaking work to develop national strategies to raise community awareness of bushfire arson and incorporate arson prevention messages into existing community awareness programs.

I am pleased to advise that the Australian Institute of Criminology has developed a bushfire arson prevention manual for use at a community level.

The manual will help stakeholders at the local level, including police, fire agencies, local government and land management agencies develop bushfire arson prevention strategies that will work for their particular circumstances.

Greater National Collaboration

Successfully addressing bushfire arson is beyond the capacity of any one agency or area of specialisation. An overriding message is that greater national collaboration is required across portfolios at all levels of government.

This includes ensuring better coordination between police, fire and emergency services to engage in targeted prevention programs and share information in investigating crimes.

We are also encouraging greater collaboration through the National Institute of Forensic Science and the Australasian Fire and Emergency Service Authorities Council in training programs, crime prevention strategies, law enforcement techniques and technologies.

Since last year's forum the Australian Government has developed the National Work Plan to Reduce Bushfire Arson in Australia.

Reflecting the strong Commonwealth, State and Territory cooperation on this issue, I am pleased this Plan was endorsed in November last year at Ministerial Council meetings of both Emergency Services and Police Ministers.

These Councils have also agreed to establish a joint working group to develop a whole-of-government strategy on best practices to reduce bushfire arson. This group is being chaired by an officer from the Attorney-General's Department and from Victoria.

The Strategy will provide coherent strategic direction and a framework for the roles and responsibilities for activities across jurisdictions and all relevant agencies.

Work has been and will continue to be informed by the 2009 Bushfires Royal Commission.

Where to From Here?

The joint working group will provide an interim report on next steps to both Ministerial Councils by the end of April. I look forward to hearing about progress on this front.

We are also investigating mechanisms to promote sharing of information about known and suspected arsonists between State and Territory law enforcement agencies.

I will also be hosting a second National Forum for the Prevention of Bushfire Arson, in May. The Forum will focus very much on best practice – bringing together a range of experts to consider successful examples of prevention, investigation and education initiatives.

The main aim is to ensure the strongest possible action is taken to prevent and deter bushfire arson. As such, I am very keen to hear the outcomes and views from this symposium. This will be very valuable leading up to the Forum in May.

Clearly, there is a lot of work underway to prevent bushfire arson. I would like to once again thank the organisers of this Symposium for your contribution to this cause.

I wish you all the very best with your deliberations both today and tomorrow.

It is now my pleasure to officially open Collaborating for change: A symposium advancing bushfire arson prevention in Australia.

Thank you.

Bushfire arson: Setting the scene

Dr Adam Tomison[1], Australian Institute of Criminology

This presentation will attempt to set the scene for this symposium by providing an overview of some of what we know about bushfire arson. Then, I'll pose some questions you may wish to consider over the next two days.

Defining 'arson'

- The word arson came into the English language from Middle French after the Great Fire of London in 1666 which was blamed, falsely as it turned out, on arsonists (It is now believed to have started when wheat dust in a bakery was ignited by a candle).
- When arson first came into the language, and then into law, it meant 'setting fire to another's property with malicious intent'. Thus there were two identified components: the destruction of private property and malicious intent.
- 'Arson' also incorporated the meaning of much older Saxon word 'buerning' which meant setting fire to a private or public structure with treasonous intent.
- By the time arson was incorporated into Australian colonial law after European settlement, the treason element was all but gone. However, it's interesting to note that an important symbol of the rural unrest that had gripped Britain in the eighteenth and nineteenth centuries was the burning of haystacks.
- This specific form of arson was mentioned in the original Australian arson legislation, and 220 years later, haystacks are still specifically mentioned in almost all Australian legislation, even though the original purpose for this inclusion has long gone.

Bushfire arson

- The traditional meaning of the word 'arson' referred to what is now known as 'structural arson'. In other words, the burning of buildings or other elements of the built infrastructure. The link between setting fire to a building and the intended result is usually very strong in such cases.
- There is a much weaker link between setting fire to vegetation, (i.e. bushfire arson) and the intention behind the action. One can never be quite certain whether setting fire to vegetation will result in the burning of a square metre of grass or a whole forest. Thus, it is very difficult to show the first requirement for laying a criminal charge: the intent of the perpetrator. What was he (and it's usually a 'he') trying to accomplish?
- This has forced a re-think and the definition of 'arson' has changed again to incorporate fires in vegetation, fires on public as well as private property, and fires lit recklessly and regardless of the consequences. The latter covers the spectrum of motivation from fires lit due to thoughtless stupidity (many juvenile fires) to those where the disastrous consequences of an ignition are reasonably foreseeable, but a fire is lit nonetheless.

The cost of bushfires

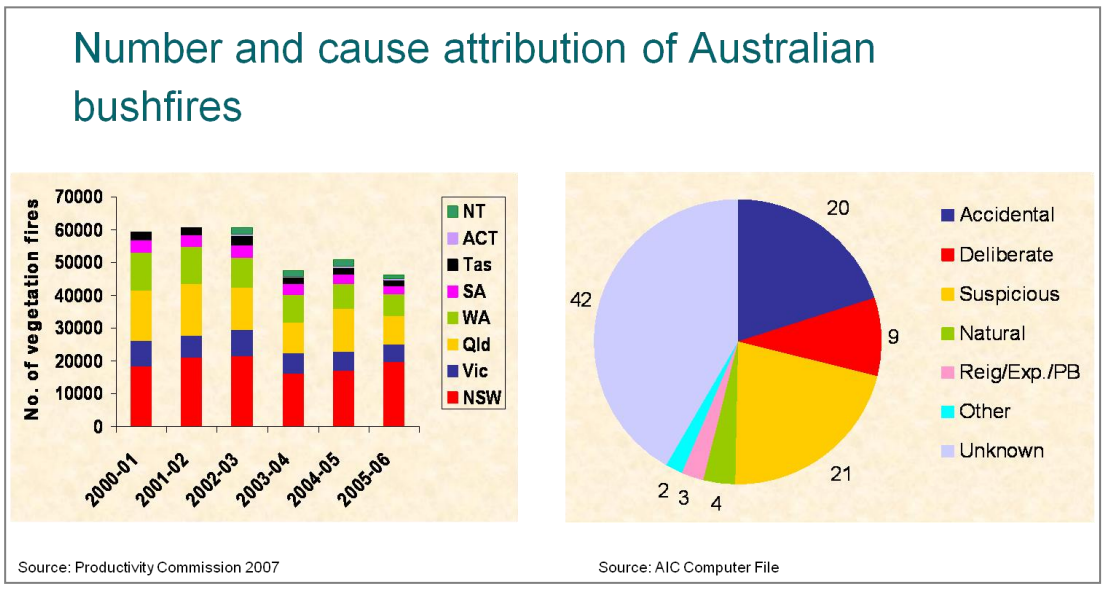
- There is yet to be a comprehensive assessment of how much bushfires cost Australia and the information I am about to discuss represents very much a first cut on some of the major elements. The workshop being convened by Professor McAneney later this morning will no doubt discuss this in more detail.
- First turning to human costs. The best estimate of fire fatalities we have was compiled by Dr Kat Haynes. She estimated that 552 Australians lost their lives in the 20th century as a result of bushfires.
- Tragically, almost 200 people have already have lost their lives in this century – most as a result of Victoria's Black Saturday fires.
- Yet these mortality figures need to be put in perspective because they are relatively low in terms of lives lost to other disasters. Heatwaves have killed many more people than bushfires, as have floods, cyclones and shipwrecks.
  - For example, more than 400 people were killed on the day the most powerful cyclone in Australia's history, Cyclone Mahina, surprised the north Queensland pearling fleet in 1889.
  - In 1845, 406 people lost their lives the night the Canadian barque the Cataraqui was driven ashore in the kelp beds of King Island.
- The human cost of bushfires is expressed more in terms of injury than fatalities. According to figures produced by the Bureau of Infrastructure, Transport and Regional

Economics, more people are injured by bushfires than all other natural disasters combined.

- Then there are the economic losses. In an average year, significant bushfires cause insurable losses of between $80–100 million. However there is a second tier of major or catastrophic fires. The Black Friday fire of 1939 is estimated to have cost $750m, the 1983 Ash Wednesday fires $400m and *insured losses* from the 2009 Victorian fires now exceed $1billion dollars.
- Insured losses, however, are just a small proportion of the economic costs of bushfires. Preparing and responding to fires may cost four times as much; and uninsured losses of both private property and public infrastructure may well exceed insured losses.[2] Losses from the Black Saturday fires, some of which are thought to be arson events, now exceed $2.5 billion[3].
- Turning to the environmental costs of bushfires. I recognise that many of these, such as changes to ecosystem structure and loss of biodiversity, are intangible so I wish to focus on just two that we may be able to estimate.
- Australia has successfully argued that bushfires are 'natural' disasters and thus greenhouse gas emissions from them are not currently included in our national emissions targets. Though they are not counted in the targets, work is going on to try and quantify the greenhouse impact of fires. I believe this will be discussed later this morning.
- A current estimate is that major fires such as the 2003 fires increased our annual emissions for that year by nearly a third[4]. There is a view that this does not matter because the carbon will be recaptured as the land re-vegetates, however that only works if there are no more fires in that area for the next century.
- The other environmental cost I wish to mention is clean water yields from catchments. Some estimate that a major fire in southern Australia depresses catchment yield by 20–30% for about 30–50 years[5]. With more than three million hectares of catchments burnt in southeast Australia since 2003, bushfires are having a profound, but not yet fully quantifiable, effect on Australian water supplies.
- In addition to these are the intangible but none the less very real psychological costs of bushfire. Many people remain severely traumatised by the Black Saturday fires and the current liability court case running in the ACT has shown that the scars from the 2003 fires still run deep.

Number and cause attribution of Australian bushfires

- Let's look at the frequency and causes of bushfires. Because we don't know the cause of many bushfires, it is difficult to apportion costs with any degree of accuracy, so what I going to say next is designed to put some basic parameters around what the costs might be.
- There are on average about 54,000 bushfires a year in Australia. The number of fires has stayed fairly constant although you can see some seasonal variation, such as when Australia moved from a La Niña to an El Niño pattern in 2002[6].



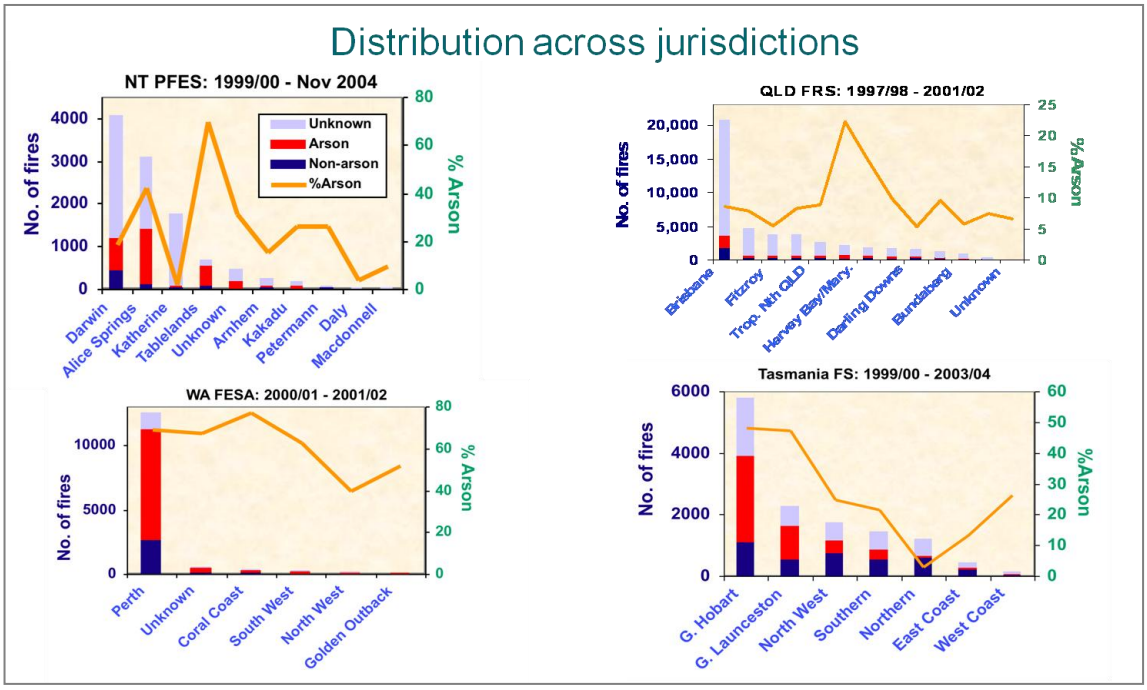
- Turning now to the causes of ignitions presented in the pie graph which is based on an AIC analysis of nearly 300,000 records from 18 fire agencies over five years. You can see that for the largest proportion of fires the cause is unknown (42%). However, if we only consider fires where the cause is known, deliberate or suspicious motives are attributed to more than half of all fires (with a known cause).
- Now it might be argued that we need to recognise that fire and police agencies generally don't investigate fires with no property or human cost – thus fires with no known cause will be an inflated figure (i.e. if we did investigate we could identify the causes of many more fires). Further, within this group it might be expected that there would be many fires caused by natural causes (i.e. natural fires over-represented in un-investigated fires).
- Yet where fires are actively investigated, the majority have been found due to arson, e.g. in Western Australia arson has been found to be the cause of more than half of all bushfires. In some NSW data the figure is 64%. Further, many accidental fires are attributed to cigarettes. It is now known that it is very difficult to start a fire with cigarettes so that many roadside fires attributed to cigarettes may be in fact arson.
- Overall, it is suggested that the number of arson fires across Australia could be in the tens of thousands in most years.
- One of the interesting questions then, which does not appear to have been investigated yet, is whether arson-related fires do more damage than fires caused by other means?

Distribution across jurisdictions

- Let's now look at bushfire patterns. Bushfire arson is not a random activity. It is in fact, highly patterned in terms of geography and time. This is important because: first, if something is patterned, then we can make projections about what will happen in the future. Second, if it is patterned, then the causes of arson are discoverable. This means we can move from reacting to the problem to being proactive to address causation and prevent fires.
- One of the things that becomes immediately apparent when looking at the jurisdictional distributions is that ignitions are highly correlated with human settlement. Interestingly, the numbers of fires in the various regions correspond very closely to the percentage of a state's population living in these areas. This suggests that fire-lighting rates are fairly constant across the population as a whole.

Arson is patterned activity

- Consequently, most fires, perhaps as many as 80%, happen on the urban bush interface and almost all of these fires are small – burning 5 hectares or less. This suggests that in terms of numbers, bushfire arson is very much an urban phenomenon[7].



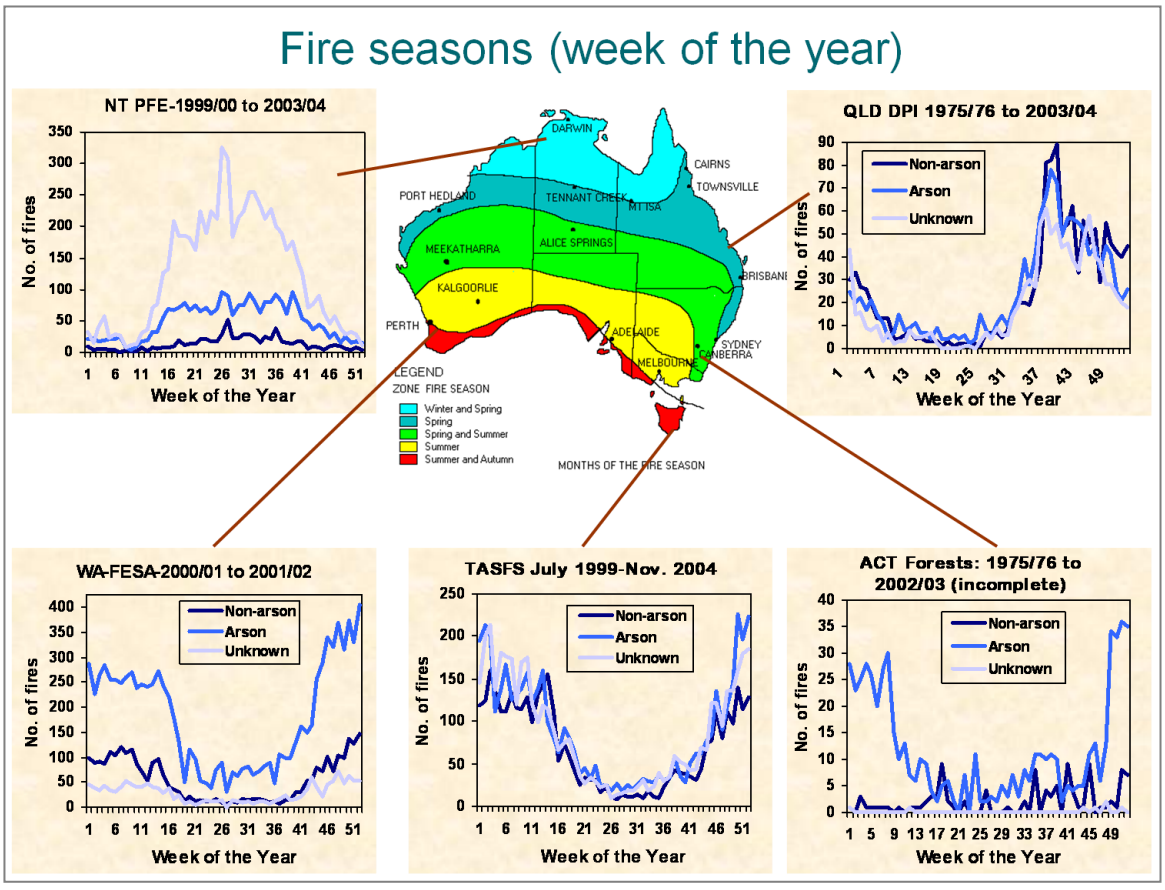
- Fires in rural areas are less common but burn larger areas, particularly in northern Australia. So, in terms of consequences, rural arson is also important.
- One of the interesting aspects of this slide is the difference in the number of fires due to unknown causes between jurisdictions. Note here the very low numbers of unknown cause fires in Western Australia.
- There are two reasons. First, FESA has a very active policy on bushfire origin and cause investigation and it works closely with WA Police (they have a joint arson investigation unit). Second, the majority of WA's fires happen on the urban fringe of Perth where the potential for major damage is a real and present danger. Thus, they have a big incentive to reduce arson events, and FESA claim a clearance rate for arson (structural and bushfire arson) of more than 30%.

Seasonal patterns in bushfire arson

- As you can see from the slide and I'm not it's not a huge surprise, bushfire arson patterns are clearly associated with seasonal patterns.
- Most areas have a sharp increase in ignitions at a particular time of year. In southern Australia, this coincides with the Christmas-New Year period. Two graphs on this slide are particularly interesting. FESA (WA), as I mentioned before, has been very active in determining the causes of fires as illustrated by the lower number of unknowns noted in the previous slide. With better attribution, you can see how bushfire arson fires both follow and exaggerate the pattern of natural fires. In the ACT Forests graph, arson patterns are so significant they almost appear to determine total fire patterns.

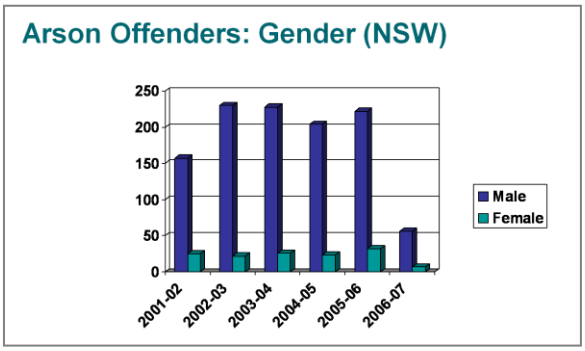
So who lights bushfires?

- The characteristics of those who light bushfires that I am about to describe are based on two sources.
- First – convicted bushfire arsonists – the estimated less that 1% of bushfire arsonists that are identified and convicted
- Second, the analysis of the relationship between geographic patterns in ignitions and the surrounding populations' socio-economic profiles. Since the bulk of bushfire arson is committed by someone living within a four kilometre radius, the surrounding populations'

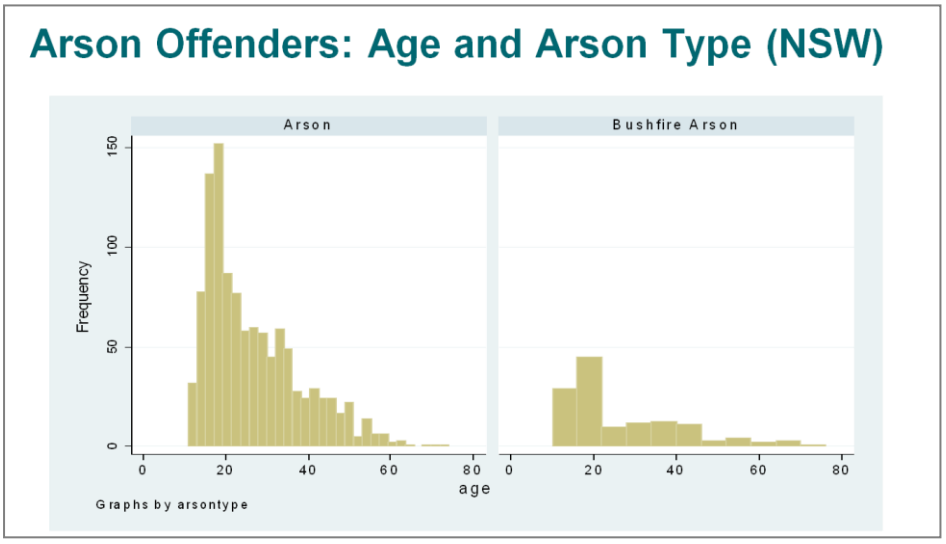


profile is a good indicator of the socio-economic context of the arsonist[8].

- It is worth noting that Indigenous persons seem responsible for a significant proportion of arson fires. In NSW for example, 37% of juveniles and 20% adults convicted of arson are Indigenous and there are generally high ignition densities in that state around settlements with a high proportion of Indigenous persons. It may be that the cultural context of fire is different even amongst urbanised Indigenous populations.
- This finding would suggest a need to develop a better understanding of cultural differences in the use of fire, and to ensure Indigenous people have a clear understanding of non-Indigenous arson laws. Or it may be that this finding is more about socioeconomic and family dysfunction issues. I'll come back to this.
- Overall, the clearest finding we have is that the majority of arson offenders are young males who appear to 'grow out' of the crime – as the next slides will demonstrate.
- This graph of convicted arsonists in NSW indicates that rates of arson peak in the early 20s, followed by a gradual tailing off. This suggests that a significant percentage of bushfire ignitions are due to boys who just grow out of it, in the same way that most young people who commit antisocial behaviour or crimes in the 15–24 year age group will also grow up and settle down.
- One of the characteristics of bushfire arsonists that everyone wants to know is, what is the rate of recidivism? The AIC has assessed much of what has been written in English on the subject.



- Thus far, the evidence is rather inconclusive, with studies suggesting a recidivism rate from 4% to 60%[9]. Arrest patterns provide little guidance because the possibility of being arrested twice is as unlikely as being arrested once.
- Professor Ogloff will discuss the psychological profiling of offenders in the next presentation but I'd like to just touch on some of the AIC research that has looked at assessments of individual arsonists based on the national and international literature.
- First, it appears that bushfire arson is not a specialist crime type – many known arsonists commit other crimes. Between 2001 and 2006, 56 percent (1099 offenders) of convicted structural arsonists and 37 percent of bushfire arsonists (133 offenders) in New South Wales had a prior conviction for a previous offence.
- This assessment is supported by looking at geographic patterns of arson. There is a strong correlation between areas with high crime rates generally and high bushfire arson rates. Thus, the socio-economic correlates to high crime rates in general: income, age structure, housing

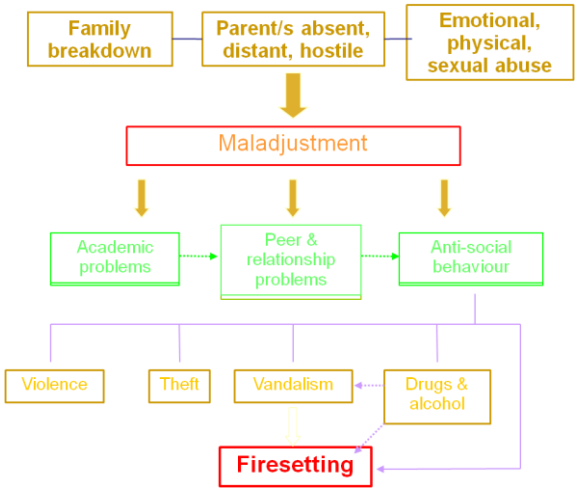


tenure, employment rates, lower rates of two-parent natural parent family structures, and migration churn are also important indicators of high bushfire arson ignition densities.

- When geographic patterns in ignitions are plotted, one of the strongest socioeconomic correlations is the density of single parent families with children under 15 years.

Dysfunction to ASP

- This next slide describes a possible causal pathway from family dysfunction to youth adjustment issues and various forms of 'acting out', including firesetting. The key point I want to make here is that arson may be just one of the constellation of ways that a dysfunctional family environment may manifest itself in a young person's subsequent behaviour.



Socio economic context of arson

- Since populations with the characteristics associated with high risk of arson (and other crimes) often occur on the urban fringe where suitable targets are near at hand, perhaps it is not surprising that this is also where most arson occurs.
- Since these relationships will only change slowly, bushfire ignitions often happen in the same place and the same time every year. This means that they may be predicted with some accuracy if data systems are adequate
- The SES context may also explain some of the Indigenous over-representation mentioned earlier. In other words, the over-representation may be more about being low SES, and family and community problems rather than a cultural difference. Although I think we should also look more closely at cultural differences in the use of fire.

System Responses

Now let's look briefly at system responses…and I'll pose some questions for consideration over the next two days.

Criminal justice system: Investigation

- As indicated earlier there are likely to be tens of thousands of bushfire arson incidents in Australia every year with most being small fires on the urban bush interface. A series of workshops conducted by the AIC and discussions with front line police have indicated that in most jurisdictions, fires are generally only actively investigated where there has been personal or property damage.
- Effective investigations appear to be often hindered by two factors: first, interagency coordination – lines of responsibilities between police and fire agencies – are often blurred by either regulation or practice leading to demarcation issues. Second, the information on ignition patterns is often not sufficiently robust to allow investigations to be strategic. In other words, agencies may not be able to determine which fires they should select to investigate and why.
- Let me be clearer. Studies of known serial arson cases both here and overseas usually show that the offender had lit many fires before a pattern was recognised. The Harrogate case in South Australia is a good example of this where a 42 year old woman lit 47 fires over a period of three fire seasons before being caught. It took investigators some time to realise the fires were the work of one serial arsonist which provides some support for the view that we need to increase the quality of ignition data.
- The need to enhance pattern recognition skills has also been recognised by front line police and fire agency personnel as a key 'need' in the national bushfire arson investigators course currently being designed to increase their investigation capabilities
- Although there have been recent increases in numbers, Australia has lacked a critical mass of trained bushfire arson investigators to respond to major events; and it is still the case that often investigations have been hampered by insufficient awareness of the techniques of evidence preservation by fire agencies.

- An indication that we need to create ways of improving our ability to investigate is that bushfire arson remains the crime with the lowest clear up rate of any jurisdiction. Our largest states, for example, often convict less than 50 people a year for bushfire arson between them[10]. How many of the 1000s of offences actually involve property or person loss is still not able to be accurately determined.

Criminal justice system: Legislation.

- Although there may be a need to enhance the investigation phase, the reality is that bushfire arson remains a very difficult crime to prosecute. The evidence is often destroyed by the offence, even with the best evidence preservation techniques. This means that direct evidence linking the individual offender with the event is often absent.
- Another problem is that linking an individual to a location at a particular time requires a better knowledge management system than most agencies currently possess. For example, there is often little systematic recording of those near the point of an ignition. This is one reason that there are many persons of interest and few convicted arsonists.
- As the seriousness of the crime of bushfire arson has become apparent, most jurisdictions have changed their legislation over the last decade to incorporate the special circumstances of the crime.
- The most ambitious attempt was made in 2001 by the Model Criminal Code Officers Committee (MCOC) – a committee of law officers established to report to the Standing Committee of Attorneys General (SCAG) on legislative reform in 2001[11].
- They proposed the establishment of a separate offence of bushfire arson that would incorporate the meaning of 'lighting a fire reckless as to the consequences'.
- Some states, most notably NSW, have adopted the MCOC principles. However, there are still more than 60 pieces of legislation that cover bushfire arson legislation in Australia, and state and territory jurisdictions have recently signalled that they will not be pursuing the introduction of uniform legislation that might streamline Australian bushfire arson law.

Legislation and the courts

- One thing that has been common across Australia is the tendency to increase maximum offence penalties after major fire events. Maximum penalties in most jurisdictions are now at a similar level to manslaughter. This represents a practical ceiling for this strategy because of the difficulty in proving the perpetrator had the deliberate intention of killing (i.e. murder).
- Despite the push for punitive action, even when offenders are convicted, less than one third receive a custodial sentence.
- Further, when a custodial sentence is imposed it is often about 12 months – perhaps reflecting the lack of prior convictions and the young age of most offenders brought before the courts.

Reducing arson potential in individuals and communities

- So given the difficulties in identifying, investigating and prosecuting offenders, maybe we should also be focusing on preventing arson?
- Nearly all fire agencies in Australia have juvenile intervention programs designed to lower an individual's propensity for arson. Many of the candidates for these programs have been referred by the courts, police or educational authorities, while others have been nominated by their parents or guardians because they have shown an undue fascination with fire. Evaluations of these programs both here and overseas indicate that they are effective in reducing arson potential at a relatively low cost.
- However, in an assessment carried out two years ago, the AIC was not able to identify such interventions for adults in Australia, or to identify any systematic programs aimed at rehabilitation. Maybe this is not such an issue if we intervene early with 'at risk' and offending youth – given that most people will grow out of firesetting?
- Programs aimed at reducing the arson potential of communities have also been successful when:
  - 'At risk' communities have been identified with some sophistication i.e. not just relying on an Index of Social Disadvantage (SEIFA) score and;
  - The engagement has been comprehensive. In other words, the program has incorporated a multifaceted strategy that has included things like media campaigns,

door knocks, and displays in shopping centres, schools and other gathering places.

Questions for consideration

All this is leading up to me posing some questions for your consideration over the next two days.....

Targeting & Investigations

- Can the information on the pattern of bushfire arson be developed into a useful product – such as an ignition risk tool?
- How can we become more strategic in determining which fires should be investigated?
- And how can the effectiveness of investigations be enhanced?
- Can multi-agency approaches to bushfire arson be developed that are enduring and extensive?

Legislation and the courts

- Have we reached a dead end with legislative reform or is there still some potential to improve the consistency of Australian bushfire arson legislation?
- Is the court process functioning effectively in bushfire arson cases?
- Should arsonists be dealt with via a specialist court system that provides both therapeutic and justice outcomes?

Dealing with Arsonists

- What do we really know about the psychological profile of Australian bushfire arsonists? What's the basis for, and reliability of, current knowledge?
- Can we improve our knowledge of bushfire arsonists to the level that it becomes useful for law enforcement?
- What therapeutic approaches work, or have shown potential?
- How do we identify which aspects of a population's profile increases arson propensity? How do we lower the risk of arson?

Conclusion

Now, to conclude, there are two themes in criminology and they are well represented here at this symposium. The first is focused on the characteristics of the individual offender and it is fair to say that this has been the dominant discourse on bushfire arson to date. The second focuses on factors external to the offender, such as opportunity and the role of guardians (i.e. those who can stop the offender such as parents, teachers, rangers, police). I believe Dr Cozens will be discussing this approach as the first keynote speaker tomorrow morning.

Overall, bushfire arson appears episodically in the public consciousness yet is among our most expensive crimes in terms of human, economic and environmental costs. It also consistently features as the crime with the lowest clearance rate in almost all Australian jurisdictions. The size of the challenge should not mean we lose sight of how far we have come, particularly in the last five years. We know a lot more about bushfire arson than we once did and Australia can boast a consolidated knowledge of the subject that would be the envy of many countries across the world. With this track record behind us, and the expertise of those attending this event, I am confident that further in-roads will be made in understanding, preventing and responding to bushfire arson.

Notes and references

1) The author gratefully acknowledges Warwick Jones (AIC Research Manager) for his assistance in preparing this paper.

2) Ashe B, McAneney J and Pitman A 2009. Total cost of fire in Australia. *Journal of Risk Research* 12(2): 121–136.

3) This is based on Insurance Council of Australia estimates (currently $1.2 billion), a one billion dollar provision in the 2009 Victorian Budget and the standard value of the loss of a human life ($1 million); thus the figure is conservative and is lower than that supplied by the Productivity Commission.

4) Australian Greenhouse Office study released in 2005 that was included in the Garnaut Report.

5) Ker P 2009 Water harvest from dams may fall by 30%. The Age 18 Feb http://www.theage.com.au/national/water-harvest-fromdams- may-fall-30-20090217-8aa4.html. The article was based on the views of Rob Skinner, Managing Director of Melbourne Water

   Lane P et al 2007. Impact of the 2003 alpine bushfires on streamflow: Predicting the long-term impacts of bushfire on water yield. Canberra: Murray Darling Basin Commission

6) The Productivity Commission has compiled total 'landscape fires' for 2004–5 to 2008–09 (Figure 9.4 in Report on Government Services 2010). This supports the AIC assessment that the

number of fires nationally is very constant with the continuing presence of an El Nino weather pattern in NSW driving a small decrease.

7) This figure is based on Bryant C 2008. Understanding bushfire: trends in deliberate vegetation fires in Australia. Technical and background paper no. 27. Canberra: Australian Institute of Criminology. Because the AIC does not own the data it can only be reported in aggregate form
8) The socio economic information is based on Bryant 2008, Muller 2009 and the Hunter Arson Reduction Taskforce maps.
9) This topic is covered in BFAB #45. Quoting Brett's (2004) study of all arsonists (both structural and bushfire) it found, 'A comprehensive review of the published international literature on recidivism of fire setters that used criminal records and hospital files found that repeat fire setting varied from four percent to 60 percent. The reviewed studies included forensic psychiatric, criminal justice and general and psychiatric hospital samples, and identified numerous methodological problems with the studies. It was found that there was insufficient evidence to label fire setters as dangerous recidivists, and that there was little information that could be used by psychiatrists in assessing the dangerousness of arsonists'.
10) Between 2001 and 2005 there was an average of 55 persons per year convicted of arson (structural and bushfire) in Victoria. In NSW in the same period there was an annual average of 26 persons convicted of bushfire arson. These two jurisdictions had more than 27,000 bushfires between them in 2004. If half of them were due to arson, then the identification and conviction rate is somewhere around four in a thousand incidents.
11) MCOC was a committee of law officers established to report to the Standing Committee of Attorneys General (SCAG) on legislative reform. Its membership was drawn from legal academics, parliamentary counsels and officers in state and Commonwealth justice departments.

Overview: The psychology of firesetting

Prof James R P Ogloff *(Centre for Forensic Behavioural Science – School of Psychology and Psychiatry, Faculty of Medicine, Nursing, and Health Sciences, Monash University, and Victorian Institute of Forensic Mental Health (Forensicare))*

In partnership with Professor Mairead Dolan, Dr. Rachael Fullam, Dr. Troy McEwan & Ms. Lauren Ducat at Monash University and Dr. Kate Fritzon and Dr. Rebekah Doley at Bond University, Professor Ogloff is developing a comprehensive research project on the psychology of firesetting, including the validation of assessment, intervention, and risk prediction strategies. This project will be carried out within Problem Behaviour Program at the Victorian Institute of Forensic Mental Health (Forensicare). Agencies interested in partnering on this project are welcome to contact Professor Ogloff.

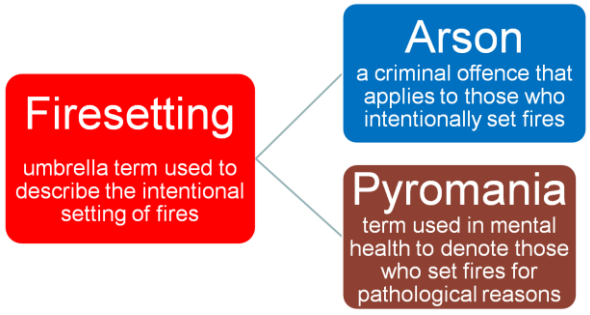
The Problem

- Before the devastating fires of Black Saturday abated, police and fire-fighters revealed that some fires were intentionally set.
- Although rare, volunteer and paid fire personnel have been found to deliberately set fires

The Scope of the Problem

- Research shows that 13% of bushfires in Australia are deliberately set and 37% more were "suspicious" (Bryant, 2008).
- Rollings (2008) estimates that arson costs $1.6 billion a year in our country.

Terminology



Limited Knowledge Base – Particularly for Bushfire Arson

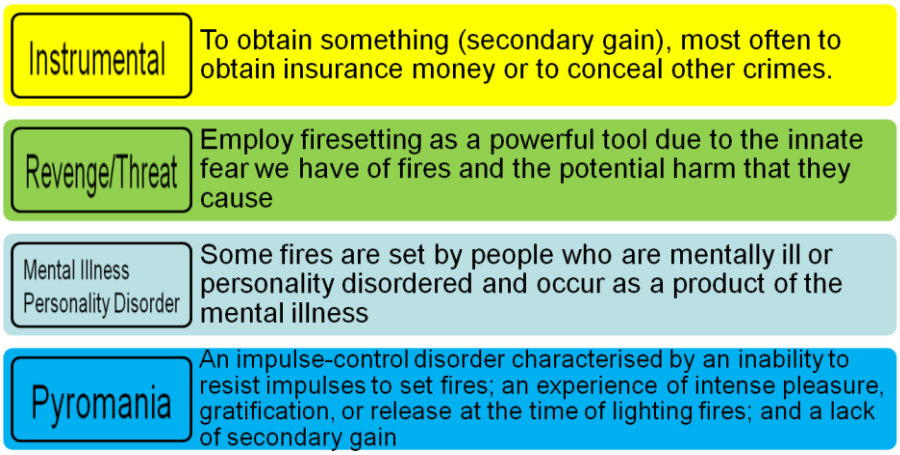
- We know something of the nature and type of firesetters (particularly those who set fire to structures)
- Our knowledge-base is still surprisingly limited
- Although developments have been made, there can be little confidence that current interventions are effective in reducing the risk of arsonists re-offending

Types of Firesetters

- There is no one "profile" or "mindset" of a firesetter; the reasons people set fires are varied and complex

Instrumental

- Do not present particular characteristics; do not require specialised treatment.
- Seek particular outcomes; do not experience intrinsic pleasure from setting fires.



- Their firesetting is goal-directed and purposeful.
- The chances that people will die or be harmed by the fire are dependent upon the firesetter's intent to harm or kill others and the uncontrollable nature of many fires.

Revenge/Threat/Show of Force

- Employ firesetting as a powerful tool due to the innate fear we have of fires and the potential harm that they cause.
- The characteristics of these firesetters are more similar to others who engage in threatening and harmful behaviour.

  → *For this group, the firesetting is merely the means to an end.*

Mental Illnesses/Personality Disorders

- Some fires are set by people who are mentally ill or personality disordered and occur as a product of the mental illness.
  - *Mental Illness*: may perceive that the fires they set are for legitimate reasons as a result of delusional thinking. These people are most likely to have schizophrenia and to abuse substances.
  - *Personality disorder*: Some people with personality disorders that have impulse control difficulties and light fires

Pyromania

- Categorised as an impulse-control disorder.
- Characterised by an inability to resist impulses to set fires; an increasing sense of tension before setting fires; an experience of intense pleasure, gratification, or release at the time of lighting fires; an interest in fire-related paraphernalia; and a lack of secondary gain.

  → *Although the most interesting, this is also the most controversial category*

Distribution of Types

- The relative proportion of firesetter types varies, depending on the particular population
  - Most firesetters have instrumental motivations (revenge or financial gain).
  - The smallest group is those diagnosed with pyromania.

  → *It was once believed that firesetting was sexually motivated. Although it does occur, it is only in a tiny number of cases.*

Motivation for Harm

- Most firesetters do not desire to cause physical harm.
- Most arsons occur in abandoned or vacant structures – or in uninhabited bush.
  - A small (unknown) number of firesetters are indifferent to the harm they may/do cause.
  - Only a tiny minority of firesetters desire to injure or kill people who fall victim of the fires they light.

HOWEVER...

- The risk for causing property damage is great and the risk of harm to others can be significant
- Pyromaniacs have an all-too-often desire to light larger and more spectacular fires, which increases the risk of damage and harm

  → *All firesetting raises significant concerns due to the oftentimes unforeseen nature of fire and the devastating consequences that can ensue.*

Persistence of Firesetters

- A review of 24 studies drawn from the international literature on the incidence of firesetting reoffending indicates the rate varies from 4% to 60% based on subsequent arsons (Brett, 2004).

  → *It is generally accepted at least 30% of arsonists will go on to subsequently set fires*

- Some firesetters, light hundreds of fires over time.

  → *Given the nature of their firesetting, such individuals have a great deal of difficulty simply refraining from thinking about and setting fires.*

Risk Factors for Firesetting

"We consider that it may be a mistake to conflate recidivism and dangerousness; our data suggest that a repeat firesetter is not necessarily one who causes the most harm, and the assumption that the concepts of recidivism and dangerousness among firesetters are interchangeable should be challenged" (Dickens et al., 2009, p. 635)

- An area that requires more concerted research is how we can identify which firesetters are at greatest risk for re-offending.
- We need to know more about risk factors for those who repeatedly set bushfires.
- The so-called "profiles" of firesetters are quite nebulous, similar to other general offenders, and generally useless for identifying individual

firesetters or determining which ones are at risk for re-offending (i.e., young, white, lower status males who are socially limited, unemployed, substance using, and often criminally versatile).

- As with other offenders, it is less-common that firesetters are "exclusive" offenders (i.e., only offend by committing arson). Most typically, arsonists commit a range of other offences. In fact, arson re-offence rates are quite low.
- Firesetting should not be thought of as a unitary construct due to the complex and varying range of behaviours, motivations and antecedents associated with firesetting

  → *Thus, the risk factors will vary accordingly*

- There are few reported predictors that could be used to differentiate arsonists from other offenders, let alone one-off firesetters and serial firesetters.

  → *The reported predictors for arson offenders tend to be similar to those for other offenders, and thus render very little predictive validity.*

- Some factors have been found to be related to risk of future firesetting include:
  - Young, single, males with interpersonal difficulties and alcohol or drug addictions
  - unstable childhoods/home lives; school adjustment problems
  - low intelligence
  - mental health issues/personality disorders
  - extensive firesetting history (with early onset)
  - history of property crime
  - (although rare) those arsonists who experienced feelings of tension and excitement when engaged in firesetting behaviour were more likely to be repeat arsonists.

Treatment & Intervention

- Some fire prevention strategies have promise for reducing arson.
- Many programmes are psycho-educational in nature, teaching children and adults the dangers of fires.
- Psychological interventions for firesetters are still understudied and equivocal in effect
- We must begin by systematically assessing all convicted arsonists to help inform the establishment of appropriate interventions.
- Assessments and interventions must take individual, family and environmental factors into account.
- Attention needs to be focussed on the aspects of the firesetting incidents as well (i.e., the person's intent, social context, personal and emotional reactions, and the consequences of the fire).

Recommendations

- All convicted arsonists must be assessed by qualified psychologists and/or psychiatrists.
- More attention is required to develop and validate effective treatment programs (individual and group) for firesetters, taking into account their individual differences
- The screening of prospective fire fighters is required
- Systems are required to identify "red flags" (e.g., the fire fighter arsonist may seem to be always first on the scene, even when they have not been called to the job; they may have an uncanny ability to locate the fire's origin and any incendiary devices; or they may be able to locate and report fires that are not visible from road ways or common thoroughfares)(Burgess, 2008).
- Mechanisms are required to collect and monitor such suspicious behaviour to enable further review in an appropriate manner.
- A national research approach is required for firesetting and arson.
  - This would require the establishment of a coordinated body that would include those with expertise in policing, fire fighting, and other emergency services as well as relevantly experienced mental health professionals and academic researchers.
  - This group could provide oversight to research and service initiatives.
- Research is required to answer the following questions:
  - What are the specific motivations or functions for firesetting that can be used to aide investigation and management?
  - What are the risk factors for engaging in firesetting and repeat firesetting?
  - What are the types of offences and patterns of offending associated with firesetting?
  - What are the links between firesetting and mental disorder?

- What are the most appropriate ways to intervene with firesetters to reduce the risk of similar behaviour in the future?

- More attention is required in this area.
- Further work is required in Australia to understand those who set bushfires.
- This will help identify factors that need to be addressed in the development and implementation of individualised and group treatment programmes for firesetting.

Conclusions

- Given the similarities of firesetters to other offenders, and the fact that most firesetters who do re-offend commit general offences, rather than arson, doubtless offence-related and offence-specific foci are required.
- The efforts of psychologists and psychiatrists in these regards may assist in explaining the unfathomable, and ultimately aid in reducing the devastation caused by firesetters.

The motivation for bushfire arson

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Background

It is clear from the existing literature on structural arson that fire-setters are a diverse group. While broad generalisations can be made about arsonists' age (usually young) and gender (usually male), there is no 'typical' arsonist and most do not limit their problem behaviours to fire-setting (Muller, 2008). From the first large scientific study of fire-setters in 1951 through to recent surveys, research efforts have often focussed on reducing this complex behaviour into more manageable parts, generally through classifying arsonists by their perceived motivation. Typological classification systems have proliferated over the past 60 years; a cursory review of the literature reveals over 15 separate classification systems for fire-setters' motivations (see Willis, 2004 for review). These typologies can generally be reduced to the motivational categories of revenge, excitement or relief from boredom, attention seeking, vandalism, and personal gain. Unfortunately it is difficult to ascertain the prevalence of these various motives amongst fire-setters because researchers do not report inter-rater reliability figures, the categories are often not mutually exclusive and have rarely been tested outside the originating sample, and there are difficulties in obtaining representative samples of arsonists to examine. Furthermore, many typologies mix perceived motivation with personal characteristics such as mental illness or age in a way that reduces their explanatory power (Gannon & Pina, 2010). Some authors have questioned whether these classification systems add much to our understanding of fire-setting behaviour as even relatively sophisticated attempts at categorisation suggest that fire-setting is typically driven by a single motivating force when this is evidently not always the case (Doley, 2003; Prins, 1994, Gannon & Pina, 2010).

Most studies of arson originate in the UK and USA and focus on fires in urban settings. Whether their findings are generalisable to those who set bushfires or wildfires is unknown and some authors have suggested that bushfire arsonists may be a distinct group with different motivations and behaviours from structural arsonists (Muller, 2008). Shea (2002) suggests that the primary difference between bushfire and other forms of arson is the lack of purely instrumental reasons for fire-setting amongst the former group. However, this claim is unsubstantiated, with others suggesting that a significant proportion of vegetation fires may be set for instrumental reasons such as land clearance or illegally burning areas in an attempt to prevent larger and more dangerous fires (Willis, 2004). The reasons that individuals set vegetation fires are poorly understood. Willis (2004) tentatively outlined potential motivations for bushfire; however he acknowledged that this was based on a combination of information from fire-services and police, and a large amount of supposition. The broad motivational categories Willis' typology are basically similar to those proposed for other forms of arson, encompassing revenge, vandalism, excitement, and a range of other commonly proposed motives such as profit, mental illness, crime concealment, cry for help and others (Gannon & Pina, 2010). Unfortunately, in echoing the motivations proposed for other forms of arson, Willis' system also suffers from many of the same shortcomings. Gannon & Pina (2010) note that classifying any arsonist as 'motiveless' may represent a semantic contradiction given that children or those who suffer from a major mental illness are likely to have some motive for setting the fire, even if it is not discernable or logical to others.

While the existing literature on the motivation of arsonists has a number of shortcomings, a motivational classification system may prove useful in the future if it can meet specific criteria. To be more than just a labelling system, a typology should accomplish specific tasks, including fitting with the observed phenomena, providing information about what to expect from members of each group, differentiating actions towards members of each group, and finally, it should be substantiated by research and/or linked to theory. To date only one fire-setter classification system comes close to meeting all of these criteria, that of Canter & Fritzon (1998), who used data from police records to differentiate four themes characterising the actions of fire-setters by their motivation (expressive or instrumental) and target (object or person). This system has since been subject to investigation in both adult and juvenile samples (Almond, Duggan, Shine, & Canter, 2005; Santtila,

Häkkänen, Alison, & Whyte, 2003) and may yet prove to be a useful structure to aid decisions about offender assessment, treatment and management. Whether this system is relevant to the behaviour of bushfire arsonists remains unclear.

Key issues raised in the discussion

The session was attended by participants from a range of disciplines, including fire services personnel, police members, forensic mental health clinicians and representatives from the education system, legal system and insurance industry. In the context of doubts about the validity and utility of existing motivational typologies of fire-setting, and whether such systems should be applied to bushfire arson, a range of questions were posed to group participants, including:

- Why is understanding motivation important in their work with fire-setters?
- Do they currently use any form of framework to help them understand or classify different types of motivation?
- What does breaking down motivation into subtypes help them achieve?
- What should future research focus on in this area?

Discussion about why it was important to understand the motivation of fire-setters focussed on how an understanding of motivation helped each professional group work with fire-setters. For example a police officer identified that having some understanding of apparent motivation would help to guide interview questions and the direction of the investigation, or what sort of behaviour could be expected in the future, while a forensic psychologist noted that understanding motivation was integral to developing a specific treatment program tailored to an individual fire-setter. It was recognised, however, that it was unlikely that one motivational typology would be equally useful for the diverse professional needs.

Overall, the group identified a range of issues in understanding motivation. It was evident that police and fire-fighters used a basic 'motivational' categorisation system to help them in their work, although it wasn't formally identified as such. Such informal motivational frameworks based on experience have been observed in other areas of police investigation. They noted that they usually differentiated between fire-setters who had mental health needs and whose fire-setting appeared to be related to these needs, and those whose fire-setting was externally focussed and not related to mental health. Furthermore, they identified a difference between 'impulsive' fire-setters, linking this to boredom, and those who's fire-setting appeared to be planned and have a clearer objective. This kind of basic division was seen as a useful way of understanding the behaviour at a simplistic level, and identifying the kinds of subsequent actions required (e.g. referral to mental health, charge etc).

It was also apparent that existing bushfire arson programs are built around implicit motivational assumptions that might limit their appropriateness to all bushfire arsonists. Juvenile arson intervention programs are generally educational in nature, assuming that young people do not want to cause damage with fire. Operation Nomad, run by the South Australian Police, in contrast targets high fire danger days, suggesting an assumption that arsonists are motivated to cause the maximum possible damage. Such assumptions are likely appropriate in many cases (as evidenced by the anecdotal success of the programs), however a more nuanced understanding of the variety of motivations of bushfire arsonists may help us understand the strengths and limitations of such interventions and target them more appropriately.

Conclusions and recommendations

The consensus of the group was that ultimately understanding motivation is only one part of working with fire-setters. For police and fire services personnel, motivation was identified as important, but only resulted in deliberate fire-setting when present in conjunction with the right circumstances, and so wasn't the only aspect of fire-setting to be understood and managed. As a result, limiting opportunities to commit arson may be as effective as identifying and apprehending motivated offenders for preventing arson. The clinicians identified that they didn't believe a motivational typology was the most useful way to understand an individual fire-setter's motivation; preferring to conduct an assessment and use all the evidence available to come to a detailed formulation about why the fire was set by that person at that time. In general, there was more interest in the idea of motivation per se than in constructing a more complex framework or categorisation within which to understand motivation. Motivational typologies were identified as potentially useful in that they might be able to guide the assessment process, but only if they were well developed and validated.

The group agreed that future research should focus primarily on identifying risk factors for recidivism rather than trying to further elaborate on or develop motivational types. The consensus was that a better understanding of risk factors was essential to improving practice at every stage of the system, from fire-investigation and law enforcement, through to court processes, assessment, and treatment. Participants identified that to do this there would need to be a concerted effort to collect data from sources other than the courts, as few fire-setters make it this far through the system, and those who do are not necessarily representative of all fire-setters. Suggestions for data collection sites included:

- Insurance companies
- Primary and secondary schools
- General mental health services (including child and adolescent services)
- Police 'persons of interest' or intelligence databases

It is possible that once risk factors for recidivistic arson are better understood, these may be structured using some sort of validated motivational typology, such as that by Canter & Fritzon (1998) to streamline assessment.

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Risk factors for juvenile firesetting

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Background

The workshop provided an overview of the literature on juvenile firesetting with an emphasis on risk factors that should trigger a referral to specialist mental health services. Fire behaviour has a developmental perspective and the literature suggests that while fire interest is a common phenomenon in children aged 3–5 years, by age 10 years most normally developing children will be aware of safety issues relating to firesetting. The exact prevalence of pathological fire activity including arson in juveniles is difficult to determine due to low detection rates and the reluctance of communities to alert authorities when minors engage in firesetting. In Australia 25% of fires are thought to be started by juveniles. A number of risk factors have been associated with juvenile firesetting. Males are responsible for 80% of arsons, and males outnumber females in a 9:1 ratio. Clinical studies indicate that the firesetters' families are characterised by parental dysfunction. Parents are reported to be lower in affection, depressed, unavailable, and lacking in supervision and parenting skills. Parenting styles tend to inconsistent and comprised of harsh discipline and ineffective enforcement of consequences for undesirable behaviours. Studies suggest evidence of an association between child abuse and neglect and firesetting. Clinical studies also suggest that firesetters are more likely to meet criteria for conduct disorder and attention deficit hyperactivity disorder (ADHD). Work in the US for the Federal Emergency Management Agency (FEMA) suggests that juvenile firesetter risk can be graded as low, definite or extreme risk of reoffending based on an analysis of individual traits (physical, cognitive, emotional), social circumstances (quality of family, school and social environment) and firesetting scenario (behaviour and events leading up , during and after the event). Overall, those with low risk can be appropriately managed by educational fire intervention programmes run by fire services. Those with definite and extreme risk status are likely to need mental health assessments given the higher rates of psychopathology including conduct disorder and attention deficit hyperactivity disorder in these groups. The latter categories may also benefit from family work.

Key issues raised in the discussion

The workshop discussed the difficulties in getting mental health assessments in high risk young firesetters and drew attention to the fact that fire services provide most of the intervention work. A multiagency approach to the assessment and treatment of young firesetters was suggested but there are logistical problems in getting this off the ground particularly in rural areas where mental health services are stretched. The group felt that fire services and teachers may benefit from more education on the characteristics of those most at risk or re-offending, but there would need to be a referral point that could coordinate and refer on high risk cases to the most appropriate services. Such a system does not exist at present but was welcomed as a useful development.

Conclusions and recommendations

At present the fire services take on much of the responsibility for intervention in juvenile arson, whereas a comprehensive, multi-disciplinary approach is needed. To date, there is little Australian data on juvenile firesetting and this research gap needs to be addressed. The development of a screening tool for fire services to identify high risk cases would appear to be a worthwhile endeavour. The development of firesetter and arson assessment clinics would help build up the knowledge base on firesetting behaviours and risk of recidivism and this would ultimately enhance research and clinical capability in understanding and management this behaviour. The Centre for Forensic Behavioural Science is currently looking at the development of arson clinics for adult firesetters. Similar approaches are needed for juveniles. This approach could still be complemented by an educational approach in schools.

Overall, there needs to be a system of educating school staff and other professionals who may come in contact with children who light fires. This would enable the identification of children who show problematic tendencies to be identified earlier. Indeed the threshold for intervention needs to be dropped so children are given help much earlier. This identification needs to be accompanied by a far more responsive system and possibly a mandatory

treatment program for children with some diagnoses.

The following barriers were identified as needing to be overcome to improve the response to children who light fires:

- Forensic training to those who treat children
- Enough resources to enable a responsive commensurate with need and damage caused by arson
- The problem of the present overload of the child protection system and lack of child mental health services
- The present low priority given to arson as a cause of bushfires

Treatment and intervention with juvenile firesetters

Penny Wolf *(Country Fire Authority – CFA) &* ***Kate McDonald*** *(Victoria University)*

Background

Deliberate lighting of fires in Australia is a serious issue – in Victoria there were over 3000 arson-related fires in 2009. Arson has a significant impact on the community in terms of injury, loss of life, psychological trauma, property and environmental damage. The Australian Institute of Criminology estimates the average cost of arson in Australia from 2001–2002 was $730 million. Accurate prevalence data on juvenile firesetting in Australia is unclear; however some researchers have estimated that about 20% of deliberately lit fires are attributed to juveniles. Children under 16 are likely to be significant contributors to the incidence of vegetation fires. There is evidence that childhood interest in fire may predict adult firesetting and other crimes. Juvenile firesetting is a complex issue which involves multi-determined risk factors that are fire specific and general behaviour specific. Many juvenile firesetters have associated mental health, emotional, behavioural, familial or social issues.

Most current 'treatment' of such young people relies on fire safety education delivered by the fire service as the sole intervention. Recent research has highlighted limitations of this approach and best practice endorses a multidisciplinary approach where fire services and mental health services work together and collaborate with other relevant agencies such as police, juvenile justice, and social welfare. Juvenile firesetting is a community problem, not just a fire service problem.

Key issues raised in the discussion

The discussion focussed on what were the main gaps/barriers in achieving a multi-disciplinary approach to the problem. They are listed below:

- The fire services 'own' the problem but do not have resources to 'manage' the whole problem
- Mental health and other agencies lack knowledge of seriousness of the issue so agencies such as Department Human Services, police and courts continue referring cases to fire services who don't have the required skills and expertise to treat the complex issues of the high risk clients
- There are no formal agreements between mental health services and fire services and no Australian screening tool to identify high-risk clients, guide or fast-track appropriate treatment. High risk clients are not being 'treated' and are more likely to be recidivists.
- There is no specialist mental health intervention for juvenile firesetters
- There are long waitlists in child and adolescent mental health – competing priorities
- There are different legislative arrangements in states in Australia
- There is no central database and no clear scope of the problem
- There is no collection of data on both firesetting behaviour and recidivism

Conclusions and recommendations

- One central body to case-manage juvenile fire setters that manages the problem, screens and coordinates fire safety education and suitable treatment to appropriate agency/ies and outlines clear roles for each agency
- Establish a national/state reference strategy group that would develop a co-ordinated early intervention referral/treatment path with clear roles for each agency.
- The development of a screening tool to guide treatment or utilisation of existing tools
- The development of specialist materials for use by mental health professionals
- Education of relevant stakeholders at State and National levels, on costs and seriousness of issue eg. run professional development seminars
- Lobby politicians to press for government policies to support bushfire arson prevention via a coordinated multi-disciplinary approach. Local planning and partnerships need to be underpinned by policy and leadership across government
- The development of national/state data collection system that gives better indication of prevalence of problem
- Use research findings and media to help support argument

Risk assessment

Dr Rebekah Doley *(Bond University) &* ***Dr Katarina Fritzon*** *(Bond University)*

Background

With heightened community focus on the issue of arson prevention and management in our community, work has commenced on developing a best practice approach to managing convicted arson offenders. Currently in Australia there is no standardised treatment modality designed specifically to address the unique demands of intervention with adult deliberate firesetters. This workshop considered the results of a preliminary review into current best practice for risk assessment of arson offenders. Reference to advances in the international arena were made and the applicability of the lessons learn overseas to the domestic context was examined.

Key issues raised in the discussion

Participants were divided into two main groups for the purpose of creating a shared context for the discussion. The groups were Practitioners (consisting primarily of Psychologists), and Investigators (consisting of fire service personnel, police, and legal practitioners). Participants were provided with a set of questions, and the discussion centred around the following key areas:

The investigators felt that arson is a huge problem, and is under-resourced. There is a deficiency in the data that is known about arsonists, in that existing research tends to be based on small sample sizes, and specific populations. It was felt that risk assessments need to be more diverse, and the investigator group highlighted a specific need for geoprofiling across agencies (police and fire service)

The clinicians also highlighted the problem of risk assessment research identifying very few specific factors. They identified the need to include cultural factors in risk assessment; and also to include undetected arsonists within the samples.

This latter point (about undetected arson) led to a general discussion about the need for better detection, referral pathways (not just from the criminal justice system where an individual has already been detected and charged), coordination of services so that individuals who may be suitable for treatment can be referred to the agencies most suitable for providing that treatment, for example.

One further question was raised about the usefulness or otherwise of identifying subgroups of arsonists, and if so on what basis should arsonists be divided into subgroups. It was felt that typologies might be useful for treatment, and in particular there was a clear distinction made between those who commit arson for 'instrumental' purposes such as insurance fraud, versus those whose arson may be driven by mental health concerns, or other 'expressive' motives.

Conclusions and recommendations

The main conclusions and recommendations reached were around the need to establish clear inter-agency collaboration specifically around referral pathways for treatment, as well as communication about risk between agencies who may be aware of unidentified arsonists.

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Treatment and intervention with adult offenders

Dr Kate Fritzon *(Bond University) &* ***Dr Troy McEwan*** *(Centre for Forensic Behavioural Science, Monash University)*

Background

There is very little published research in the area of treatment for adult arsonists. A UK paper published in 2001 (Swaffer, Haggett, & Oxley, 2001) has provided the basis for a number of treatment programs to be established in the UK primarily based in either medium or high secure forensic hospitals, as well as one identified program for individuals with intellectual disability (Taylor, Thorne & Slavkin, 2004). The latter has published some outcome data that shows improvement following treatment on a number of psychometric measures. There are no treatment programs currently offered in Australia, within Corrections or Mental Health. One promising model is the Forensicare clinic in Victoria, which provides services for individuals with Problem Behaviours including fire-setting. This does not require a court referral, although in practice many clients are referred in this way through the criminal justice system for pre-sentence court reports.

The workshop outlined the functional analytic model which provides the primary treatment approach for the UK model (Jackson, 1994), as well as providing an overview of the assessment strategy and primary treatment targets and modalities. Case studies were also presented. Some ideas for future directions were also outlined in the form of drawing comparisons with other more established forensic treatment literature. Specifically, the Ward and Siegert offence pathways model for sex offenders was compared with the Canter and Fritzon (1998) typology for arson, with suggestions for differential treatment goals emerging from this comparison.

Key issues raised in the discussion

Participants were divided into two main groups for the purpose of creating a shared context for the discussion. The groups were Practitioners (consisting primarily of Psychologists), and Investigators (consisting of fire service personnel, police, and legal practitioners). Participants were provided with a set of questions, and the discussion centred around the following key areas:

It was acknowledged that a number of barriers exist in moving forward in the area of treatment. There is a lack of skills/knowledge amongst practitioners in terms of identifying an appropriate model for working with individuals with this behaviour. There are also limited resources available for developing that knowledge, especially in rural/ remote areas. There also appears to be a lack of political commitment underpinning these problems which means that key stakeholders are not necessarily motivated to prioritising the identification and referral of individuals with fire-setting behaviours.

In terms of assessment and treatment, it was felt that a number of existing models and approaches could be useful. Existing risk assessment tools such as the HCR-20, and Level of Service Inventory (LSI-R) could be adapted, with fire specific variables being added (research is needed to identify these). It was felt that a therapeutic jurisprudence approach to treatment would be helpful, such as that used by Drug Courts or other problem solving courts. This would also offer a clear referral pathway by which individuals could be linked in with services to provide treatment.

Conclusions and recommendations

In conclusion from the above discussion it was felt that an ideal system for managing and treating adult fire-setters would involve an inter-disciplinary case management approach including fire-service (who currently have juvenile programs running, although these are not psychological and have not been evaluated), police, Courts, and mental health. This system would include tracking and monitoring of high risk offenders.

It was recommended that an important first step would be to establish clearer referral pathways be established across jurisdictions, at minimum involving standard referral of defendants who have engaged in fire-setting to psychological assessment to determine the need for treatment to help resolve the behaviour. This was considered important even where arson charges were not present but fire-setting was due to the frequency with which arson charges are not pursued at trial.

Participants identified the need for further research with fire-setters to allow for the development of valid assessment tools, however agreed that this would need to be supported by the above changes to current referral pathways so as to allow fire-setters to be channelled to services where research can be conducted (e.g. mental health services or similar).

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Wildfire arson recognition

Supt Richard Woods *(ACT Rural Fire Service)*

This paper provides an overview of the keynote presentation provided by Superintendent Richard Woods of the ACT Rural Fire Service to the "Symposium Advancing Bushfire Arson Prevention in Australia" in March 2010. Supt Woods has over 15 years experience in the investigation of wildfires in Australia and holds a Graduate Certificate and Graduate Diploma in Fire Investigation, along with specialist wildfire investigation qualifications from Australia and overseas (North America). He has provided training in the field of wildfire investigation to Australian, South Korean and North American Fire and Police Investigators.

Background

The issue of recognition of wildfire (bushfire/grassfire) arson events is critical to implementing prevention and investigation strategies. In many jurisdictions the deliberate lighting of wildfires is often erroneously reported as being an accidental cause (discarded cigarettes etc), whereas in most instances a minimal investigation can prove this as being incorrect and in fact, these fires are often maliciously set.

The intent of this paper is to provide an overview of interpretation of a post fire scene in bush and grass fires and the steps applied to recognising arson events.

What challenges face fire investigators in the investigation of deliberately lit wildfires?

The challenge for fire investigators is to ensure they identify an arson series early as possible, as every deliberately lit wildfire has potential for tragic consequences. They may also tend to escalate in frequency and/or severity if no steps are taken to investigate and prosecute those responsible. Unfortunately, there is a perception in the community that wildfire arson is one of the most difficult crimes to solve and that if you light wildfires, you have little threat of being caught. However, minimal training of investigators and a coordinated investigation effort can prove this wrong.

Nevertheless these fires can be a challenge to investigate as most firelighters work alone, often conceal their activities to avoid detection, will leave the area prior to the fire being noticed or reported (but often return to see the results of their work), leave little obvious physical evidence, rarely confide in others and may appear to function in a random or unpredictable manner. Additionally, the commission of the crime is also short in duration. Unfortunately, untrained fire crews in their effort to suppress the fire may also destroy or obscure evidence of the fire cause, making the investigators' job all the more difficult. Also challenging is that often witnesses for these actions are rare as the area arsonists operate in may be 'remote' from the eyes of the community. More so, in many cases the motives behind deliberate wildfire lighting are unfathomable, given the (potential) consequences.

What are the triggers that identify a deliberately lit wildfire?

The 'flags' identifying deliberately lit wildfires tend to be: two or more fires attended to in the same location over a pattern of days (or weeks, months or even years) and lit in locations easily accessible (off walking tracks, trails, roads). More particularly, in these events there are no clear causes or linkage to an accidental cause; or there may be evidence of the ignition or a device used to delay ignition (the intent being for the arsonist to give themselves a time delay to flee the scene and be well away from the area when the fire breaks out). In most cases, a 'hot set' (match or cigarette lighter) is the method used in deliberate fire lighting (based on US research). So some evidence may be nearby to support this as the method used.

Trained and experienced wildfire investigators examine fire scenes to locate specific evidence to qualify the ignition source used, the location of the ignition, as well as other 'themes' such as vegetation type etc. This allows for a 'signature' pattern to be identified, to assist in linking fire

events and possible offenders. The investigator can often locate the delay device, which may involve the use of charcoal briquettes, fire lighters, cotton rope, incense sticks, mosquito coils or marine flares. However a check of the internet can expand the opportunities available to arsonists. What is important is that contrary to belief, experience has shown it is very rare for arsonists to use petrol or accelerants in wildfire ignitions. Knowing these facts can assist fire investigators to identify the ignition cause.

What is the first step in the investigation process at the fire scene?

It is critical for the first arriving fire crews to take responsibility for identifying the cause of the fires they attend. The initial step is to have them preserve the area they found burning when they arrived at the scene – as it is within this area where the fire started and where any evidence of the fire cause may exist. This scene can then be retained in an undisturbed condition and be provided to the fire investigator to examine, for careful examination for the fire cause.

How is the origin located by investigators?

A similar process is employed by wildfire investigators to wildfires as is applied to structural fires by structural fire investigators in identifying the cause of building fires. The post fire scene provides distinct patterns (indicators) which give the fire investigator clues as to the way a fire behaved at the time of burning. By combining their knowledge of fire behaviour in bush and grass fuels, they can determine the direction the fire travelled (and ultimately where it came from, being the origin). A thorough examination of the origin area for ignition remnants can then confirm the fire cause.

Conclusion

The priority for fire services is to identify early the possibility of arson caused wildfires and ensure the scenes are examined by appropriately skilled and qualified wildfire investigators for them to make accurate fire cause determinations. This can be achieved through training, planning and resourcing the wildfire investigation capability of fire and police agencies. Without a concerted effort, the problem of deliberate fire-lighting will never be addressed. The ultimate aim should be to have the community think, “If you light wildfires deliberately, you will be caught”.

Improving multi-agency approaches to arson prevention

Supt Chris Lewis *(NSW Fire Brigades)*

Background

This workshop commenced with an overview of a recent history of multi-agency co-operation in NSW. In particular multi agency initiatives such as Strikeforce Tronto, HART (the Hunter Arson Reduction Team) and the work of the NSW Interagency Arson Committee. The workshop then discussed what the current issues were and what could be done to address those issues.

Key issues raised in the discussion

There was a common view amongst the group that bushfire arsonists are generalist petty criminals who also indulge in regular opportunist arson and other anti social behaviour such as graffiti, cruelty to animals and car stealing. It was also believed that this can frequently lead to more severe crimes including violent crime. The opinion of the group was that any arson, even petty arson that does not lead to major destruction should be taken seriously.

Bushfires and thus Bushfire arson is a seasonal issue and as such public interest can run from it being a front page issue during peak periods, to it being very low profile during slow seasons. This varying level of bushfire activity can also be reflected in the staffing and resourcing levels of agencies that are tasked with data gathering and investigation and especially the agencies tasked with preventing bushfire arson occurring in the first instance.

The irregular activity levels regarding bushfires, can lead to poor data collection and patchy investigation. Many pointed out that it is a mistake to not collect data or investigate fires in slow seasons or from small fires as this still is vital intelligence for identifying arson trends and possible arsonists.

It was also highlights by various members of the workshop that an inter agency approach should start with arson prevention and that many agencies that may not be directly involved with fire fighting or criminal prosecution still have the potential to interact with potential arsonists. All agreed that this does not currently occur or is done poorly despite a common interest in preventing arson. The term used was ‘silos of excellence’– agencies individually doing great work but not communicating.

An associated issue is interstate cooperation, again this was identified as poor both for data sharing and research, and to keep tabs on interstate arsonists.

On the issue of resourcing, the point was made in relation to black Saturday that if a fraction of the resources that were available after the event were available before the event, then the magnitude of the consequences would have been greatly reduced.

It was pointed out that as bushfire arson is difficult to firstly investigate and very difficult for Police jurisdictions to get a conviction. In addition the consequences of bushfire arson can be so devastating that a similar approach to terrorism should be taken in that it is far better to put resources into prevention and early invention than to dealing with the aftermath.

Interstate co-operation should be adopting best practise approaches to data collection, research, investigation and prosecution of the crime of arson. It was pointed out that in the UK arson involving young people is seen as a red flag to issues of mental health and triggers various interventions.

Frequently privacy issues prevent agencies exchanging information on possible arsonists. The example was given of an agency that may have information regarding a young fire lighter and not passing information on because they believe that they may violate privacy legislation to pass that information on to Police despite the fact that withholding information may lead to major property losses and death.

The group believed that many in a community know who are responsible for lighting fires but do not see it as their role to pass this information on. This may be because in many cases the community do not believe bushfire arson is a serious crime, especially where a fire does not cause major damage. We need to push the fact that any arson can result in death and property loss and the there should be zero tolerance in the community to this crime.

Conclusions and recommendations

- All bushfire arson is serious, despite this it is usually only the large destructive bushfires that get the attention and resources.
  - All bushfires should be investigated to some level and data collection should be consistent.
  - Data collection should be shared across agencies and state boundaries particularly in

regard to persons of interest and identified arsonists.

- Competing priorities within agencies leads to a patchy and inconsistent approach to data gathering and investigation of bushfires.
  - Relevant agencies should ensure that systems of investigation can be geared up or down dependant on need while ensuring a basic minimum of investigation during quiet periods.
  - This must include maintaining professional relationships with other relevant agencies.
- Bushfire arson is hard to investigate and very hard to get a conviction.
  - All agreed that increasing resources to prevention strategies would greatly reduce the impact of both bushfire disasters and the need for subsequent investigation.
  - As with terrorism, the consequences of bushfires mean that it is far better to prevent then to convict after the event.
  - A multi-agency approach to prevention should include many agencies (such as mental health) that may interact with potential arsonists.
- Privacy concerns with public sector agencies lead to a reluctance to share information regarding potential arsonists.
  - There should be a clear legislative requirement to pass on information that may prevent the crime of arson.
- Bushfire arson is not usually seen by many as a serious crime unless major losses result, as such many are reluctant to pass on information on arsonists.
  - A national media campaign should highlight that all arson has the potential to kill and that information from the public can prevent fires happening.

Cooperation in the investigation process of bushfires

Supt Richard Woods *(ACT Rural Fire Service) &* ***Supt Paul Hollowood*** *(Victoria Police Force)*

Background

The investigation of the cause of bushfires is a shared responsibility in Australia between the Fire and Police Services. However, often their roles are not closely linked (the Fire Service extinguishes the fire and determines the cause; the Police Service investigate who is responsible). More recently, opportunities have arisen to more closely integrate Fire Service and Police Service fire investigation specialists, providing a greater level of correlation of investigation intelligence. This session will review the arrangements that typically apply between the Fire and Police Services and explore options to more successfully investigate the problem of bushfire arson.

Key issues raised in the discussion

A presentation was provided (Supt Richard Woods) to outline the benefit to be derived as a result of cooperative efforts between fire and police agencies within Australia as it particularly related to the investigation of the cause of fires. Based on his experience this included an overview of how fire and police investigations are currently undertaken and how those cooperative arrangements could operate more effectively.

Workshop participants supported a desire for interagency collaboration with a contrary view not being expressed. It was remarked that a considerable level of good will already existed between fire and police agencies. The main issue appeared to be whether an ideal operating model or a variety of best possible options was capable of being developed and more importantly adopted.

It was unlikely that a 'one size fits all' approach could be achieved for all Australian States/Territories. Part of this was influenced by the scale and size of jurisdictions and how their dedicated resources were often organised. There was considerable variation in the operating models of fire and police agencies as it related to specialist investigative capability and forensic support.

It was highlighted by participants that bushfire arson was not necessarily considered a high priority in many jurisdictions within both police and fire agencies due to competing resources and that this would influence their approach. Similarly, whilst fire and police agencies generally subscribe to an overall aim of achieving community safety and reducing arson, they took different paths to achieving this, which could inhibit them taking a joint approach.

Organisational vision appeared to strongly influence the level of commitment of agencies. There was some discussion about the differing investigation cultures of fire and police agencies in respect of thinking, approach, training and language. Whilst possibly an inhibitor it was also viewed as perhaps beneficial to have differing perspectives working toward a common goal.

Arguably police agencies have strongly aligned their development of investigative capability toward fire causation and behaviour, less so, in respect of arsonists. As a result many existing police training programs place little, or in some case, no emphasis upon understanding the motivation and behaviour of arsonists. Similarly, fire agencies have focused their investigation training to the examination of the fire scene, and have not provided for skill sets to assist in the identification of arsonists.

There was some discussion around the traditional approach of police agencies toward investigating arson offences with a tendency toward a post crime reactive approach. An example was given of how the Victorian Arson & Explosives Squad has altered its focus away from purely reactive to more targeted investigations aimed to prevent or disrupt serial or recidivist bushfire arson activity.

Interoperability issues were discussed in respect to different agency systems, the different type of data collected, the need to use of a common terminology and the extent to which this information is shared between agencies. Great benefit was recognised in overcoming the barriers of interoperability to increase interagency cooperation.

The importance of good working relationships between key players in agencies was highlighted. This was believed important at all levels. Some existing problems of cooperation, included police not attending suspicious fire reports or fire agencies not advising police of suspicious fires. It was believed that effective relationships needed to operate at all levels, particularly at a local level.

There was some discussion about improving collaborative arrangements. Some of this related to better articulated working protocols between

agencies. There was discussion about the benefits of exchanging operational personnel between agencies, sharing of training opportunities, or even a joint task force approach toward investigations.

The workshop concluded that the most significant impediment to achieving increased capability appeared to be a lack of specific political will and organisational commitment toward these goals. Whilst many of the States/Territories operate differently, great benefit was seen in adopting a national approach toward overcoming common problems that are experienced.

Conclusions and recommendations

- Where are we now and where would we like to be in five years in relation to this aspect of bushfire arson prevention?
  - There is existing good will and cooperation between fire and police agencies, but there is also a consensus that this can be better developed in order to increase organisational investigation capability for all agencies.
  - It is appreciate that this would be a multi-years journey; however a sustainable outcome is necessary, whereby a more effective bushfire arson prevention and detection approach can be achieved through interagency collaboration.
- What are the main gaps, and which ones should be addressed as a matter of priority?
  - Achieving a common shared vision amongst fire and police agencies concerning arson
  - Increased sharing and interagency accessibility of suspicious fire related data
  - Developing a common language and terminology amongst all agencies
  - Increased joint collaborative efforts amongst the agencies; including operating arrangements, training, exchange of personnel, etc.
- What do we need or need to do in order to address the priority gaps?
  - Obtain an appropriate political and corporate level commitment and support
  - Further develop specific training packages targeting cooperation investigation methodology between police and fire investigators.

Tracking individuals at risk of committing serial arson

Dennis Mulroney *(SA Police) &* ***Julie Williams*** *(SA Police)*

Background

The session presented an overview of Operation Nomad, the South Australia Police (SAPOL) state-wide bushfire fire prevention initiative that first began in the early 1990's.

Dennis Mulroney, the planning officer for the operation over the last 5 fire danger seasons, presented a summary of the overall operation as: SAPOL's response to the threat of bushfires in South Australia. It is a policing operation in support of the Country Fire Service, the nominated control agency for bushfire. The Operation applies to the whole of the State and is focussed on policing activities that will reduce the incidence (ignitions) and adverse effects of fires (response) caused by deliberate and/or reckless human activity. This is best described as a 'risk management' approach to preventing bushfire ignition from any source by providing a highly visible policing presence and zero tolerance of breaches of fire laws as well as a targeted approach to persons of interest (the individuals identified as being at risk of committing arson). The operational strategy (tactics) for the monitoring persons of interest, involving direct contact with them on days of severe, extreme or catastrophic fire danger was also outlined.

Julie Williams, a member of SAPOL's State Intelligence Branch, provided an overview of the development of a matrix to identify and categorise (their risk level) persons of interest who would be subjected to the attentions of police under activities of Operation Nomad. This overview included a summary of the research conducted, the development and application of the matrix and some learning's that resulted from its application.

Key issues raised in the discussion

Key issues that arose during the workshop were:

- The nature of the operation and its activities is designed within the unique environment of SAPOL's corporate planning framework and South Australian legislation. It was identified that it cannot be a 'one size fits all' model for adoption by other States.
- The South Australian tactics of 'confronting' persons of interest on high fire risk days was discussed in relation to their effectiveness and how legislation such as "Human Rights Charters" prevents similar activities in other States.
- The difference in organisational structures was also discussed, some police services having dedicated arson squads, with varying levels of engagement with fire services, and other not.
- The difficulties of identifying, locating and accessing current (Australian based) research for use during the design of the matrix. The Australian Institute of Criminology website has a number of research materials but the remainder is spread across individual institutions.
- The legislative restrictions/difficulties that police face in interviewing persons of interest (POI's) were discussed and the need for information from academics about 'why' bushfire arsonists do what they do.
- The distinctions between arsonists & bushfire arsonists was recognised and discussed, with general acceptance that further Australian research in this area was important.

Conclusions and recommendations

No specific recommendations were drawn from the workshop.

Some conclusions drawn from the discussion were:

- Each State's legislative and operational framework dictates/limits the manner in which persons of interest are tracked or targeted
- The sharing of information across borders about POI's can be improved
- The development of a more 'consistent' method of identifying POI's across the States and Territories would be beneficial
- The need for more Australian research into the identification and motivations of bushfire arsonists.
- Significant improvement in the reporting of fires and identification of fire causes is required to support the targeting of arsonist activity

The evolving legislative response to bushfire arson

Dr John Anderson *(Newcastle Law School, University of Newcastle) &* ***Dr Gaye Lansdell*** *(Law Faculty, Monash University)*

Background

In this workshop the focus was placed on Action 3 of the National Work Plan to Reduce Bushfire Arson in Australia, that is, 'to promote nationally consistent arson and bushfire offences'.

The first presentation provided an overview of national legislative approaches to general arson and specific bushfire arson offences. The main points from this presentation were:

- Differences in legal definitions of 'arson' across the criminal legislation in Australian state and territory jurisdictions although essential basis of offence definitions is to proscribe intentional and/or reckless damage to property by fire.
- Some 'arson-type' offences extend to bodily injury, endangering life, and causing death but there is no consistency or uniformity across the jurisdictions.
- Maximum penalties for indictable 'arson-type' offences range from 10 years to life imprisonment, which, depending on the jurisdiction, doesn't mean 'natural life'.
- Model Criminal Code 'arson' offence is narrow in scope formulated to proscribe intentionally or recklessly causing damage to a building or conveyance. Important advantage is the definition of general principles of criminal responsibility in Chapter 2 of the Code – consistent use of terms 'intention' and 'recklessness'.
- Specific 'bushfire arson' offence based on the Model Criminal Code provision created in NSW, SA, Vic, ACT and NT – intentionally causing a fire and being reckless as to spread of fire to vegetation on property belonging to another. In WA comparable but more extensive offence of a lighting a bushfire likely to injure a person or to damage property under s 32 *Bush Fires Act 1954* (WA).
- Range of other 'minor' fire setting offences in various legislation across the Australian jurisdictions.
- Issues for discussion stated with emphasis on the appropriate mental element and related difficulties of proof. The need for a co-ordinated national legislative approach to bushfire arson was identified but the difficulties in achieving this approach to a criminal law issue were flagged noting particularly the experience with the Model Criminal Code.

The second presentation provided information on international legislative approaches and perspectives on bushfire arson offences. The main points from this presentation were:

- Focus on international jurisdictions where wildfires resulting from arson are comparable to Australia. Main examples from northern Mediterranean (Greece, Italy, Spain) and California, USA.
- No model arson offence in international legislation that we could adopt.
- Fires often politically motivated in southern Mediterranean jurisdictions so no direct comparison with Australian jurisdictions.
- Specific 'firefighter' offences in California both where the firefighter is the perpetrator and the victim (sentencing enhancement).
- 'Arson register' in California – to monitor post release behaviour and activities but difficulties with movement between jurisdictions where registers are not used and places onus on convicted person to notify.
- Increasing maximum penalty does not result in reduced commission of arson crimes. Questionable validity in the link between penalty and deterrence.
- Also concern is with detecting the offender following commission of the crime. Overall, detection rates are low – need for police, fire services to work at preservation of evidence at scene of crime to assist with later prosecutions.

Key issues raised in the discussion

The discussion in the workshop considered some of the issues identified by the workshop leaders but there was also discussion about other aspects of the evolving legislative response. The main points from the workshop discussion were:

- Conduct element of bushfire arson offences should extend beyond damage to property and include bodily injury and death rather than relying only on 'murder' and 'manslaughter' offences.

- Mental element should be subjective reflecting the seriousness of the offence particularly where a death has been occasioned. If high maximum penalties are available (eg 25 years imprisonment) then paradigm criminal offence involves a subjective mental element. Consensus was that due to difficulties of proving intention to kill or to cause serious bodily harm beyond reasonable doubt then 'recklessness' in the sense of subjective foresight of the likelihood of death or serious harm is a sufficient mental state when the act of arson is intentional and death results.
- Use of 'arson' offence label is important to highlight the community familiarity with this term and the abhorrent nature of the crime.
- Constructive murder proposal mentioned by Attorney-General not fully explored but workshop leaders and participants were interested in seeing the details of that proposal and comparing it to the offence of 'Arson causing death' in s 197A *Crimes Act 1958* (Vic). Would anticipate that the offence requires proof of intention in the foundation offence of arson (ie, intentional act of fire setting) and then a temporal and/or causal link to the death of a person by the commission of the arson.
- Strict liability – parallels to dangerous driving causing death offences. This would have similarities to the constructive murder proposal if causing the death involved strict liability and no specific mental state. Some discussion but number of offences is not necessarily comparable to deaths caused by dangerous driving.
- Legislative investigative powers – new powers under *Rural Fires Act 1997* (NSW) for fire service investigators in the first 24 hours after a fire (ss 33C-33E). Are these necessary given the 'crime scene' powers of police force investigators under *Law Enforcement (Powers and Responsibilities) Act 2002* (NSW)? Seemed to be some reluctance of fire service officers to use the powers but considered they were useful to have available if needed.
- Hierarchy of offences – still necessary to have a spectrum of summary and indictable offences in range of seriousness to be available both as 'back up' to indictable arson charges and to identify potential dangers in offenders from an early stage.
- Maximum penalty – must reflect seriousness of offence and be uniform although it was acknowledged that simply increasing the maximum penalty does not deter potential offenders. Although punishment has some immeasurable deterrent effect the validity of the link has not been empirically tested and is questionable. The major deterrent is increased probability of detection, which requires co-ordination of various agencies working with the community and backed up by sufficiently heavy penalties for those that are detected, prosecuted and convicted.
- Other techniques – aggravating features of general offences rather than creating specific offences, arson register for post release monitoring and closer tracking of convicted arsonists at risk of recidivist behaviour.
- Sentencing techniques (briefly touched on) including restorative justice, or creation within existing court processes of specialist tribunal (similar to Drug Court or existing personnel invested with powers similar to that court without need to create specialist one) aimed at prevention and pre-diversion programs from court for alleged arsonists may be the key in reducing arson in the community and should be considered in tandem with changes to legislation.
- Compensation models discussed – issues surrounding who will pay where defendant involved in arson usually from low socio-economic group. May have some benefit in accidental bushfire arson though. NZ have introduced similar scheme.

Conclusions and recommendations

Overall it was clearly the consensus of workshop participants that a co-ordinated national legislative approach to bushfire arson is desirable with uniformity in offence definition and maximum penalty. Given this is a discrete area of the criminal law there are obstacles to uniformity as the legislatures of all Australian states and territories must agree that this is a national priority and that co-ordinated legislative action is required.

In formulating the model bushfire arson offence it is important that the proscribed conduct extend beyond damage to property and include causing injury and death. It is also important that there be subjective mental elements with intentional fire setting and 'recklessness' as to the consequences of that fire setting being the preferred option. This is predicated on the basis that there are consistent meanings of those terms in all legislation. If the

Model Criminal Code definitions are adopted, intentional fire setting conduct is proved if the accused 'means to engage in that conduct' and recklessness as to the consequences, be it damage to property, injury or death, is proved when the accused is aware of a substantial risk that the damage, injury or death will occur [see Chapter 2, ss 5.2 and 5.4 *Criminal Code 1995* (Cth)].

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Courts and bushfire arson

Mark Woods *(Tyler, Tipping and Woods) &* ***Dr Michael S King*** *(Faculty of Law, Monash University)*

Background

There is limited research on the processes courts use in relation to the trial of bushfire arson charges. There is also little research on sentencing patterns for bushfire arson. Sentencing statistics generally include structural and bushfire arson in the one category. In addition, in many cases offenders are sentenced not only for arson related offences but for other offences, such as dishonesty and drug related offences. Only a very small number of offenders are only dealt with by the courts for arson alone.

The little research that does exist suggests that courts do not sentence differently in relation to bushfire arson as compared to structural arson. This is not to say that courts consider bushfire arson to be less serious than structural arson, only that courts take into account similar factors in sentencing in relation to both forms of arson: whether there has been any loss of life as a result, the nature and extent of the damage caused to property, the method used in lighting the fire and whether it involved premeditation, the motive for lighting the fire, the risk to the community – including whether emergency workers such as fire fighters have been put in danger – and the timing of the offence.

Further, as with structural arson, bushfire arson includes offences of a very broad range – from those that were lit on a whim and that cause little damage to property and no risk to life to those that bring about loss of life and significant damage to property. Sentencing in bushfire arson cases therefore ranges from fines or good behaviour bonds through to lengthy terms of imprisonment. There is no evidence that courts are imposing lenient sentences in relation to arson. As with all sentencing cases, courts must take into account a range of sentencing purposes, including punishment, deterrence, prevention, denunciation and rehabilitation. The balance between these often conflicting principles will depend on the unique circumstances of the case and of the offender.

Some alternative justice system practices are used to deal with less serious forms of arson committed by juvenile offenders. For example, restorative justice conferences are used in such cases. But there has been far less scope for use of these practices with adult offenders.

Key issues raised in the discussion

1. Bushfire arson prosecutions usually involve the production of significant amounts of forensic evidence. The quality of the evidence will depend on a number of factors such as the manner of collection, the processes used to preserve the integrity of the evidence, access to appropriate methods of analysis and availability of experts in the field to conduct analysis, produce reports and to give evidence in court. Significant resources are needed in order to ensure availability and integrity of forensic evidence in court. Further, the defence should have access to appropriate experts and, where necessary, testing methods to test the integrity of the evidence. As many accused persons do not have such resources themselves, it is important that appropriate levels of funding are made available to legal aid bodies to ensure that legally aided accused in bushfire arson cases can test forensic evidence.
2. Traditionally victims have had little or no role in criminal justice system processes concerning the disposition of offenders. More recently they are given a voice through the use of victim impact statements. Bushfire arson differs from most other offences in that apart from those whose property has been destroyed or who have had family members die as a result of the fire, there can be a wide range of other people suffering adverse consequences due to the fire – such as those who are forced to move from their homes to avoid the fire, employees who lose employment when businesses are destroyed, emergency services personnel who may be injured in the work they do in connection with stopping the fire or assisting those affected. Consideration may need to be given to whether legislation needs to allow for a broader definition of victim for the purposes of facilitating victim voice in the court process and for related purposes.
3. Workshop participants were generally of the view that it is important that in cases where there has been a conviction of serious bushfire arson charges that courts impose a lengthy term

of imprisonment by way of punishment and deterrence.

4. Workshop participants were also of the view that it is important that rehabilitation of offenders is promoted. Even where the offender has been sentenced to a term of imprisonment, rehabilitation programs should be made available during their time in custody and upon release to ensure that the fire starting behaviour is not repeated.

5. The workshop also considered the greater use of alternative sentencing processes in conjunction with existing justice system processes. The focus was on two forms of processes: restorative justice conferences and problem-solving court type programs applying therapeutic jurisprudence.

6. Restorative justice conferences involve a mediated meeting whereby victim and offender and, in some cases, others such as their supporters or community members discuss what happened in relation to the offending, why it happened and what must be done to make things right, such as reparation. Research has found high levels of victim and offender satisfaction with these processes. Research also suggests it promotes victim healing and, for some offenders, decreased recidivism. It is a way of actively involving victims and offenders in justice processes. It is also a way to connect offenders with the very human nature of the suffering they cause to victims in contrast to a court hearing where the participation of the offender is limited and the way in which the effects of their actions is dealt with is far more detached and sanitised.

7. Problem-solving courts seek to facilitate offenders addressing issues that have caused their offending – such as substance abuse, family violence, mental health issues and so on – while assisted by a multi-disciplinary team and under the supervision of a court. It can be offered at the sentencing or post sentencing stage. For example, the New South Wales Compulsory Drug Treatment Centre enables certain offenders towards the end of their sentence, to engage in rehabilitation under the supervision of the NSW Drug Court. While the numbers of bushfire arson offenders does not justify the establishment of a special court for the purpose, it may be that similar processes could be used by a mainstream court.

Conclusions and recommendations

At present our knowledge concerning sentencing in relation to bush fire arson is very limited. There is an urgent need for more research nationally in relation to how courts deal with bushfire arsonists, the characteristics and motivations of these offenders and the factors that courts should and do take into account in relation to sentencing.

As a priority also, governments should consider the use of restorative justice processes in conjunction with conventional justice system processes. For example, the *Sentencing Act 1991 (WA)* allows a court to adjourn sentencing while victim offender mediation occurs. This kind of process should be more widely available throughout Australia. Naturally appropriate assessment processes would need to be used to ensure that only suitable cases are referred to this process to ensure none of the parties are traumatised by it. Governments should also consider whether some of the therapeutic jurisprudence based processes used by problem-solving courts can be adopted in relation to the rehabilitation of bush fire arson offenders in appropriate cases.

Governments should also review the availability and quality of processes for collection and testing of forensic evidence and whether appropriate resources are available to the defence to test the quality of the evidence.

In five years time we would like to be in a situation where we know a lot more about bushfire arson offenders and court sentencing patterns. We would like to see a system where the underlying causes of offending in relation to these offenders are properly addressed. However, this is a tertiary form of prevention. Ideally education, mental health and social programs will be more extensively used to prevent these kind of offenders from emerging.

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Overview: Environmental criminology and the potential for reducing opportunities for bushfire arson

Dr Paul Cozens *(Curtin Research Fellow, Design Out Crime Research Centre, Department of Urban and Regional Planning, Curtin University of Technology)*

The keynote speech was divided into three sections. It highlighted a range of place-based crime prevention theories and approaches, which are potentially useful for reducing deliberate bushfire arson. The presentation provided a brief summary of the current knowledge on the topic and discussed a range of theories from environmental criminology as potentially useful frameworks for understanding deliberate bushfire arson. Finally, the keynote provided a series of recommendations to improve our understanding of bushfire arson in Australia.

Deliberately-lit bushfires in Australia represent a significant proportion of all bushfires and there are distinct patterns regarding their location and concentration in space and time (Bryant, 2008). In recognizing the importance of offender-base strategies to reduce bushfire arson, it was argued that the utility of theories from environmental criminology could provide a perspective, which can be used alongside offender-based strategies to reduce bushfire arson. Place-based strategies, such as situational crime prevention (Clarke, 1992) and crime prevention through environmental design (CPTED) (Crowe, 2000) provide useful concepts and frameworks to reduce deliberately-lit bushfires (Christensen, 2008).

Research indicates that there are up to 60,000 vegetation fires per year across Australia, which represents 40–50% of all fires attended. While only 6% are 'natural fires' over 90% are the result of people's actions (Bryant, 2008). Deliberate ignitions; incendiary (maliciously lit fires) and suspicious fires account for 50% of known fire causes (Bryant, 2008). Furthermore, 40% of all fires have no designated cause assigned by the responding fire agency – and it is suggested that some of these are also potentially deliberate.

A review of the literature indicates that there are a series of trends and patterns relating to where and when deliberately lit bushfires have been observed and documented to take place. Significantly, there are concentrations in new or recent developments at the urban-rural fringes of cities (Bryant, 2008). Ignition sites are also often juxtaposed close to pedestrian / cycle paths. A lack of facilities at the urban fringes when new residential developments are built has been observed and there are concentrations of bushfires in close proximity to national parks. Research also indicates that concentrations are evident at weekends and from 3–6 pm on weekdays, reflecting the routine activities of adults engaging in leisure activities and school children respectively (Bryant, 2008). In terms of offender profiles, research suggests children, young adult males and social disadvantage are key indicators in the patterning of bushfire arson.

Significantly, offender-based responses currently dominate the field of bushfire arson prevention – but it is noted that such approaches are derived from incomplete and limited insights from a tiny minority (less than 1%) of arsonists who have been apprehended (Ogloff, 2010; Tomison, 2010). Indeed, Ogloff (2010) has commented that the knowledge base is surprisingly limited. Furthermore, much of this research was conducted in the UK and USA (Christensen, 2008), further limiting this approach. Recent trends in criminology recognize the importance of 'spatial' dynamics of crime – and situational crime prevention (Clarke, 1992; 1997; Cozens *et al*., 2005) – but do not yet appear to have been fully embraced by the bushfire arson prevention field.

It was argued that criminological evidence needs to be systematically compiled in relation to 'what', 'who', 'where', 'when' and 'why' bushfire arson takes place. Although it is recognised that offender-based responses can be useful in helping understand the 'what' (type of arson), 'who' (type of offender) and 'why' (types of motivation) of deliberate fire-setting, the 'where' and the 'when' can be illuminated by using theories and perspectives from environmental criminology.

Environmental criminology (Brantingham and Brantingham, 1981) concentrates on reducing 'opportunities' for crime provided by the built and natural environment and the movement of people (and potential offenders) in and around areas proximal to bush-fire prone areas (potential targets). Environmental criminology "is the study of crime, criminality, and victimisation as they relate first, to particular places, and secondly, to the way that individuals and organisations shape their activities by placed-based or spatial factors"

(Bottoms and Wiles, 1997, p305). On consideration of the concentrations of bushfire arson at the urban – rural fringes, it is crucial that the planning profession is cognisant of the risks that new development and sub-division may facilitate. However, it has been argued "most planning proceeds with little knowledge of crime patterns, crime attractors, crime generators, the importance of edges, paths and nodes or the site specific solutions that facilitate or even encourage crime" (Brantingham and Brantingham, 1998, p53).

There are various theories in the field of environmental criminology which can help us understand deliberate bushfire arson. Some have been highlighted previously (e.g. Christensen (2008), Muller (2009) and are often referred to as opportunity-based theories. These include;

- Defensible Space (Newman, 1973)
- Routine Activities (Cohen and Felson, 1979)
- Crime Pattern Theory (Brantingham and Brantingham, 1981)
- Situational Crime Prevention (Clarke, 1992)
- The Conjunction of Criminal Opportunity (Ekblom, 1997)

Such theories can also be applied at a range of scales. At the micro-level, building materials and building design can reduce the fire-proneness of structures, and at the meso-level, defensible zones around built structures can further protect against bushfire arson. Finally, at the macro-level, local neighbourhoods and their roads and pathways at the urban-rural interface can also be designed and managed to reduce bushfire arson using perspectives and strategies from environmental criminology (Christensen, 2008).

Newman's (1973) defensible space included the promotion of territoriality and a sense of ownership of space as well as optimizing opportunities for surveillance. It encourages the creation and maintenance of a positive 'image' for the space, which also promotes the perception that spaces are controlled and that certain behaviours are not acceptable. Finally, the local environment is important in understand how a space might function in relation to what land uses, transport links and populations of people are juxtaposed close to a site. Simply, defensible space encourages the clear delineation between public, semi-private and private space, which can work to clarify the function of space (see Figure 1).

Clearly, the area which was previously cleared of combustible foliage / materials has protected the structure in Figure 1, and has also created a 'defensible space' from which fire fighters can more

Figure 1: Defensible Space

easily defend the property from a bushfire sweeping the area.

Routine Activities Theory (Cohen and Felson, 1979) argues that like most citizens, offenders have routine daily activities (work, visiting friends, shopping and entertainment) during which they may discover or search for potential targets. It is suggested that potential offenders living in new developments at the urban – rural fringe are likely to develop their awareness spaces over time and 'discover' potential targets for bushfire arson, particularly if there are no youth or community facilities or activities to engage them. Crime Pattern Theory (Brantingham and Brantingham, 1981) highlights how specific crimes occur in specific locations and at specific times. It examines differing scales, from patterns of crime at the meso level (city) to the macro level (neighbourhood) to the micro level (building envelope). It focuses on the offender and target as they converge in space and time with a particular emphasis on the place of the criminal event. Activity *nodes*, *paths* and *edges* are also important in the patterning of different types of crimes. Nodes are places where people may congregate or concentrate while path refer to the roads, pathways or cycle ways, which connect them. Finally, 'edges' refer to different land uses or spaces which are juxtaposed such that where they meet can be associated with confusion and conflict concerning their perceived use / function and offenders can manipulate this confusion.

In support of the theories of environmental criminology, evidence reveals deliberate ignitions occur in locations where offenders can easily escape from and where they will not be easily observed (McLean, 2000). Furthermore, evidence indicates that arsonists tend to travel only small distances from their homes when lighting fires (McLean, 2000).

It has been observed how "the timing of human-caused vegetation fires are related strongly to the timetables of people, whether they are day-to-day activities relating to work, school, shopping, or other social activities" (Bryant, 2008,p4).

Rational Choice Theory (Cornish and Clarke, 1986) asserts that most opportunistic offenders are rational in their decision-making and recognize, evaluate and respond to environmental cues. These relate to the perceived risk, reward and effort associated with the offence and environmental factors within the built / natural environment are an integral part of the decision-making process.

Developed from such ideas is the field of Situational Crime Prevention (Clarke, 1992). Increasingly, the risk for offenders can be achieved by developing strategies to extend guardianship, assist natural surveillance, reduce anonymity, utilise place managers and strengthen formal surveillance. Increasing the effort for offenders involves hardening targets, controlling access to facilities, screening exits, deflect offenders and control tools for arson. Finally, Reducing the rewards for offenders can be achieved by concealing targets, removing targets, identifying property, disrupting markets and deny benefits to offenders. These ideas have recently been extended beyond a focus on risks, rewards and effort to include excuses and provocations associated with crime (see Figure 3).

Figure 2: Routine Activities Theory. Source: adapted from Cohen and Felson (1979) and Brantingham and Brantingham, (1981).

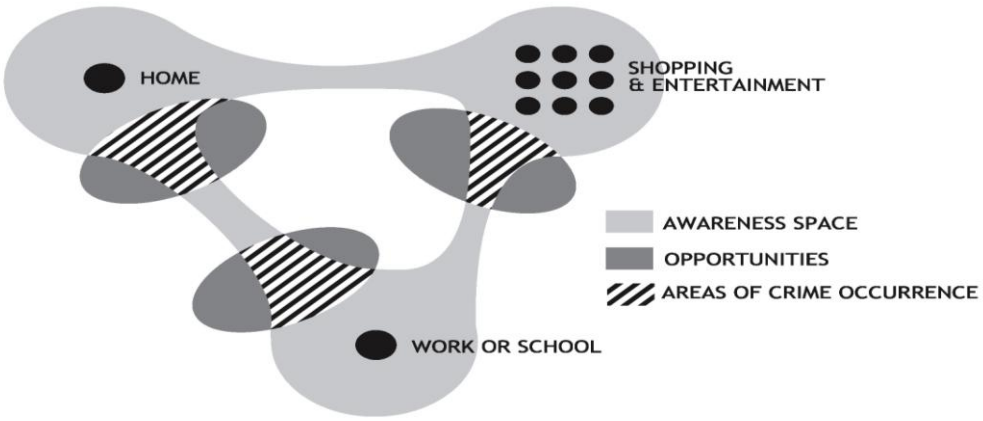

Figure 3: Situational Crime Prevention. Source: Clarke (1997)

Increase the effort	Increase the risk	Reduce the rewards	Reduce provocations	Remove excuses
Target Harden	Extend guardianship	Conceal target	Reduce frustration and stress	Set rules
Control access to facilities	Assist natural surveillance	Remove targets	Avoid disputes	Post instructions
Screen exits	Reduce anonymity	Identify property	Reduce emotional arousal	Alert conscience
Deflect offenders	Utilise place managers	Disrupt markets	Neutralise peer pressure	Assist compliance
Control tools / weapons	Strengthen formal surveillance	Deny benefits	Discourage imitation	Control drugs and alcohol

Another useful idea is the 3 D's concept (Crowe, 2000), which focuses on the designation, definition and design of space to promote legitimate activities and to discourage illegitimate behaviour. It asserts;

1. All planned human space has some *designated* purpose(s). Designate the land use, role and function of a space.
2. The use of all planned human space is associated with acceptable and desired behaviours that are prescribed and *defined* in social, cultural, legal and physical terms.
3. All planned human space is *designed* to support and encourage desired behaviours and discourage and control unwanted behaviours.

It was argued that these theories from environmental criminology could help explain trends and patterns in deliberate bushfire arson. Applying them in the local context can promote the use of more targeted and appropriate responses. They also provide another perspective / strategy to run alongside offender-based approaches or the Criminal Justice System. Environmental criminology therefore contributes to our understanding of the 'where' and 'when' to supplement the 'what', 'who' and 'why' and help us to think at different scales of analysis – micro, meso and macro.

Ekblom's Conjunction of Criminal Opportunity (1997) was also briefly discussed as a potentially useful framework for drawing together offender-based and placed-based perspectives (See Figure 4).

A range of recommendations emerges from this approach, which has analysed bushfire arson through the lens of theories from environmental criminology. These include:

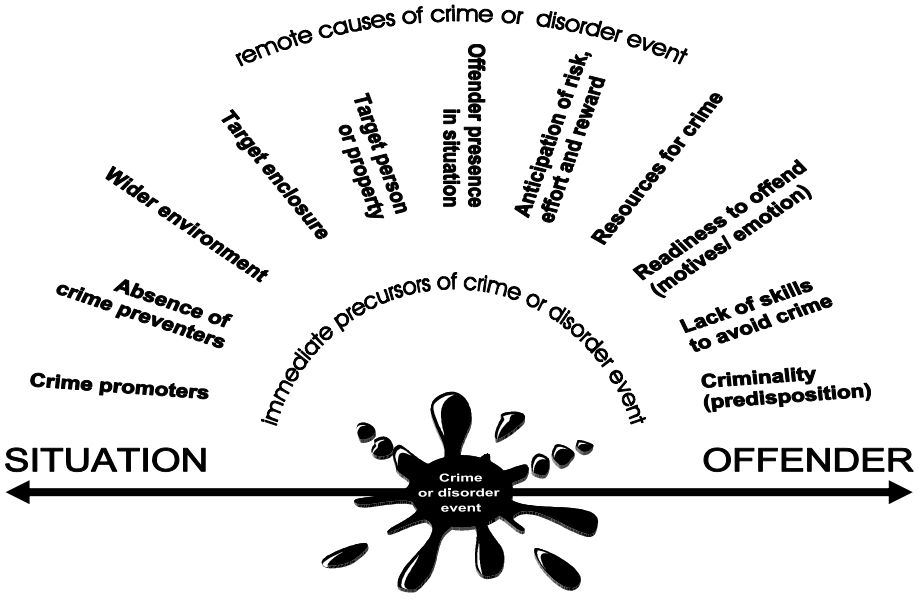

Figure 4: The Conjunction of Criminal Opportunity. Source: Ekblom (1997), www.crimereduction.gov.uk/learningzone/cco.htm

- Developing standardized definitions (of types of bushfires, landscapes, offenders and databases to measure, record and analyze more effectively).
- Improving the evaluation of bushfire arson prevention projects (using the SARA or 5I's approach).
- Developing a more holistic and dynamic Fire Risk Index (low–extreme), which expands beyond natural factors to include situational factors and local crime risks.
- Considering the local context and utilizing local knowledge of bushfire arson sites, trends and spatial patterns – no one-size-fits-all.
- Sharing knowledge across disciplines (research) and agencies (practice).
- Applying theories from environmental criminology to local contexts.
- Commission and conduct more empirical research into place-based dimensions to bushfire arson.

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The Design Out Crime Research Centre in Western Australia – www.designoutcrime.org

Partnership with community and agencies to reduce bushfire arson

Gwynne Brennan *(Country Fire Authority)*

Today I will present to you a snapshot of the work CFA has commenced in the area of reducing bushfire arson. It is in its infancy in our organisation yet is persistently championed by a skilled and committed few. I also hope to give you an insight into how we view the problem and why we are so committed to collaborating.

Bushfire arson is a wicked problem

According to the Australian Public Service Commission (APS), governments are increasingly being tasked with very complex policy problems. Some of these problems are so complex and difficult to resolve they have been labelled "wicked" problems The term 'wicked' in this context is used, not in the sense of evil, but as a crossword puzzle addict or mathematician would use it—an issue highly resistant to resolution. The terminology was originally proposed by H. W. J. Rittel and M. M. Webber, both urban planners at the University of California, Berkeley, USA in 1973

The Australian Public Service Commissioner had said "Tackling wicked problems is an evolving art. They require thinking that is capable of grasping the big picture, including the interrelationships among the full range of causal factors underlying them. They often require broader, more collaborative and innovative approaches. This may result in the occasional failure or need for policy change or adjustment"

Wicked problems usually involve a range of contributing factors and therefore require a range of integrated solutions. A commonly used example to illustrate the complexity of wicked problems is climate change. There are many individual factors that have combined to create massive changes to our natural environment. The increased release of carbons into the atmosphere has resulted from a range of factors including deforestation, industrialisation of China, massive consumption of fossil fuels, the list goes on.

When there are many causes of a problem, there is rarely only one solution! In fact as with climate change – the solutions are many. The only way we are going to combat climate change is if all members of the international community take responsibility for the problem and take ownership of the solutions.

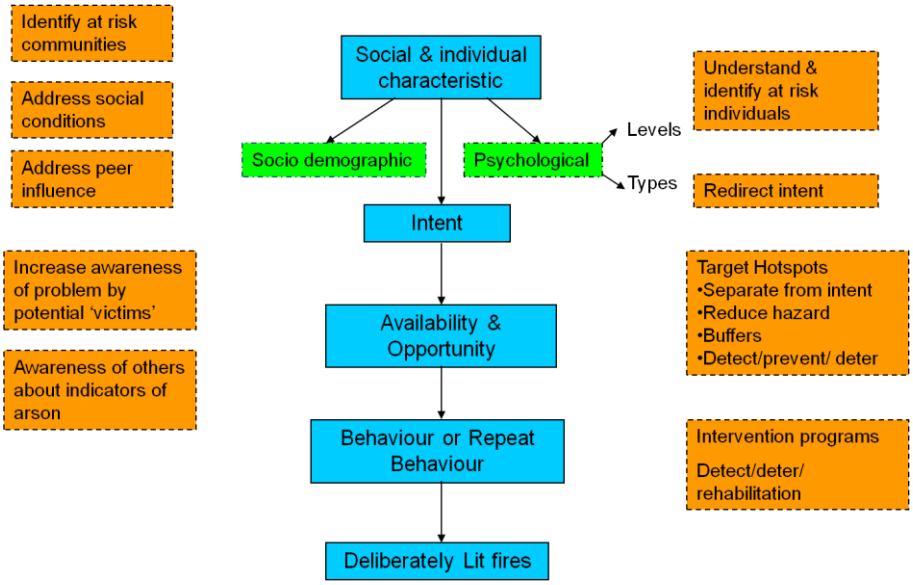
As with climate change, which affects us all, CFA also battles with wicked problems. The issue of arson and in particular bushfire arson is a wicked problem –it has many of the characteristics of wicked problems in particular:

- *Wicked problems are socially complex:* The social complexity of bushfire arson overwhelms most current problem-solving and project management approaches. Solutions to bushfire arson will involve coordinated actions by a range of stakeholders, including organisations (government agencies at the federal, state and local levels), nonprofit organisations, private businesses and individuals.
- *Wicked problems hardly ever sit conveniently within the responsibility of any one organisation:* Even if the solution to achieving bushfire arson is complex, it is clear that it involves many organisations beyond the police.
- *Wicked problems have many interdependencies and are often multi-causal:* Successfully addressing bushfire arson involves a range of coordinated and interrelated responses

CFA Initiatives

In May 2008 AFAC convened a workshop amongst the members of the Community Education Sub Group.

At the workshop they scrutinized the problem, determined a problem statement and documented the nature and scale of the problem. They then listed the stakeholders and examined the differing perspectives. A causal flow diagram was developed and then the current activities and outcomes were identified.



I acknowledge the simplicity of the diagram – in direct contrast to my previous comments around the complexity of the problem – yet the causal flow diagram helps us to focus on the potential points to be targeted for intervention

A successful arson reduction strategy will involve key stakeholders such as Police, Fire Services, Council, Industry and the community working together proactively to prevent arson and to deal with its consequences more quickly and effectively.

Let's look at a few initiatives we are involved in

Fire investigation

Fire Investigation is a critical component of CFA's responsibilities. Its objectives are

- To determine the origin and cause of the fires
- To obtain accurate information for further analysis
- To ascertain or identify the presence of any criminal activity of neglect involved

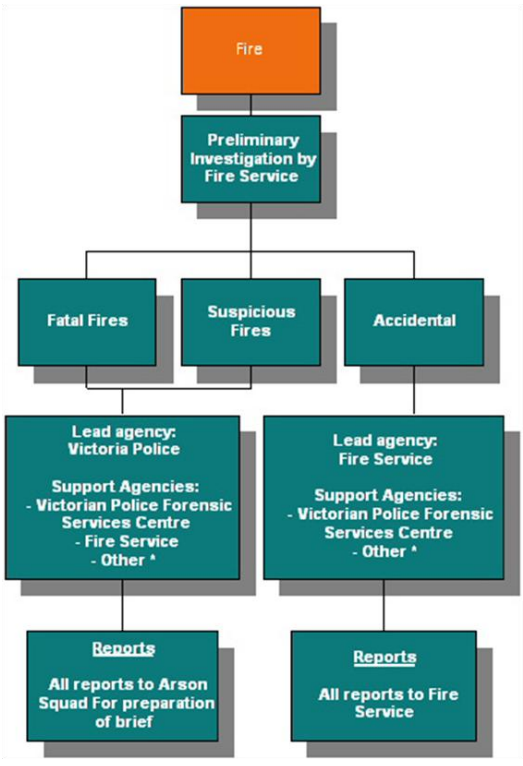
Source: Harvey and Langford, CFA discussion paper, Arson Reduction Strategy, 2008

CFA has a legislative responsibility to investigate the cause and origin of all fires that occur within the Country Area of Victoria. CFA is also a signatory to the Victorian Fire Investigation Policy & Procedures The policy and procedures is a multi agency guide to Fire Investigation within Victoria. This document specifies in the event of a suspicious fire Victoria Police are the lead agency with the Fire Services assisting in determining the origin and cause of the fire.

Within CFA all fires and incidents are recorded using the Fire & Incident Reporting System

(FIRS). CFA provides a monthly report to the Victoria Police Arson Crime Theme Desk on all fires and incidents that have been reported as suspicious, incendiary or malicious in activity. This information is currently not provided to other relevant fire agencies. This information allows Victoria Police and CFA the ability to identify "Hot Spot" locations around the state.

Information from the CFA's Fire & Incident Reporting System (FIRS) database has been used to



obtain data on the number of suspicious, incendiary and malicious fires that CFA Fire Brigades have attended for the period 01 July 2007 to 30 June 2008.

Implementation of the Online Fire Investigation Management System (FIMS), which is linked to the Fire & Incident Reporting System, ensures accurate information obtained from conducting investigations into the origin and cause of the fires is recorded. This information can then be used to identify fire trends and to allow for targeted deterrent activity

Community Awareness

Again initiated by our Fire Investigation Unit

Provision of the additional Crime Stopper signs to Regions to be placed at suspicious fire scenes in order to generate media and public awareness of the fire being deemed suspicious, and to encourage members of the community to come forward with any information that they may have in relation to the fire.

In conjunction with Victoria Police Arson & Explosives Squad and Crime Stoppers Victoria, the CFA Fire Investigation Section distributed "Crime Stoppers" posters to all CFA Regional Headquarters, Fire Stations and Training Grounds across the State. The theme of the campaign this year titled "Extinguish Arson".

Arson is a unique crime where, in the vast majority of cases, no-one ever sees who has committed the offence but someone may know information about it. This year, emphasis is placed on the community having the "courage" to report anything they have seen but more importantly "what they know".

Media campaigns in past years have included a focus on ignition prevention. The key messages were aimed at minimising the causes of accidental fires but also Included messages encouraging reporting of suspicious activity

Working with Youth

My colleagues Penny Wolf and Kate McDonald delivered a workshop exploring the prevalence and characteristics of juvenile fire setting, predictors of recidivism and analysis of best practice multidisciplinary treatment models. The multidisciplinary treatment model is the preferred approach in CFA and strategies will be built around this approach. The strategies include:

- Brigades in schools for peer guidance and pressure
- Outdoor Fire Safety
- Recognises common bushfire hazards
  - Aware of basic summer fire regulations in the Fire Danger Period and safety issues regarding camp fires and barbeques
- Introduce the subject of bush and grassfire prevention and survival.
  - The main message to get across is that it takes a very small ignition source (e.g. coals from a tipped barbecue) to start a bushfire, so that means everyone must be very aware of the danger.
  - Encourage students to identify common bushfire hazards they can find in the poster houses built close to the edge of a forest, dry grassed areas nearby and shrubs planted too close to houses.
  - Discuss safety issues regarding the use of barbecues and campfires in the summer months, especially during a Fire Danger Period.
  - Write a story about the bushfire from the point of view of one of the people shown in the poster.
  - Write each family member's thoughts about the damage they have caused

Where to from here?

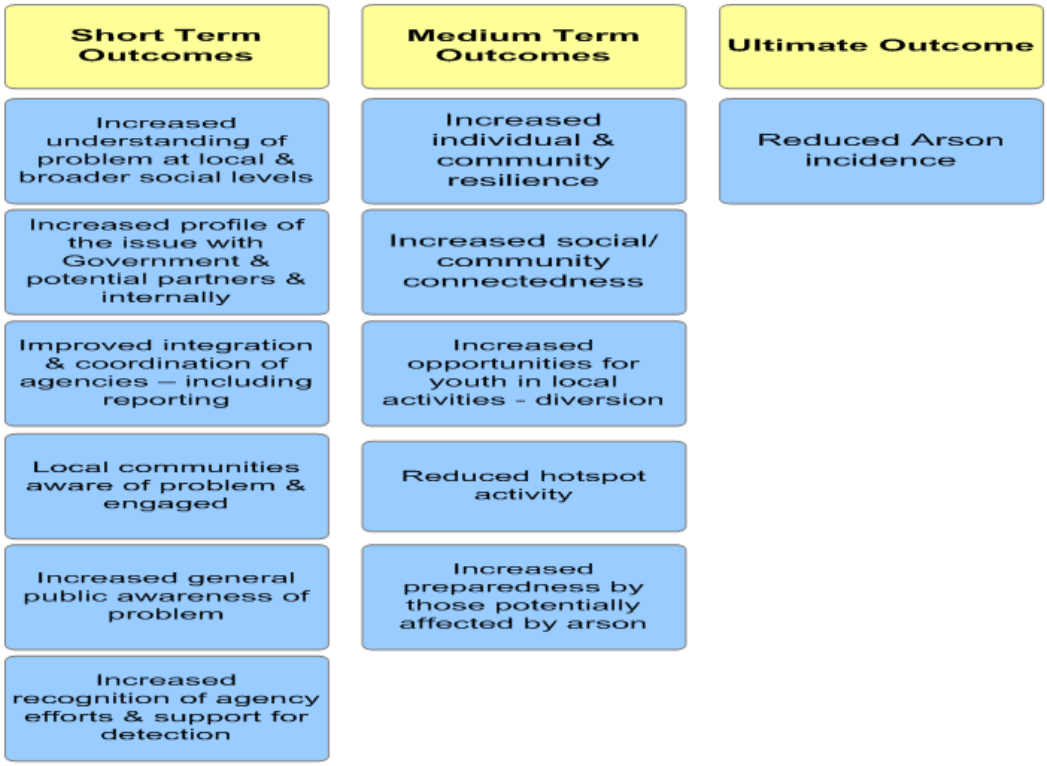
This symposium is welcome and takes us a great distance towards increasing the profile of the issue with government and potential partners and I congratulate the organisers.

There is still much to be done however:

CFA has long recognised that managing fire is not just about trucks and hoses.

CFA places enormous emphasis on planning, community education, legislation and a whole range of other risk treatments. We have made great leaps forward but the journey continues – as the problems get increasingly complex we will broaden our horizons through new and innovative partnerships

Thank you to my colleagues Penny Wolf, Nicole Harvey, Liz Langford, Lisa Sturzenegger, Dawn Hartog and Gregg Patterson for their endeavours in this area.



The media and bushfire arson

Associate Prof Phil Chubb *(Department of Journalism, Monash University) &* ***Peter Sprott*** *(Executive Director, Crime Stoppers Victoria)*

Background

Associate Prof Chubb reported on his analysis of media coverage of bushfire arson over the past two years.[*] He noted that the media was preoccupied with stories of vigilantes and strong statements about the depravity of arsonists. The media focused on the particularities of a crime and there was no evidence at all of the media in the past two years taking any general or strategic view of the problem of bushfire arson. That is, there was no evidence of the media being willing to play any role other than that of emotive reporting in the context of the laying of criminal charges and appearances in court.

Prof Chubb's enquiries disclosed virtually no evidence of the media making a genuine attempt to play a role in the prevention of bushfire arson. Prof Chubb asked the fundamental question of what would a media role in the prevention of bushfire arson involve? Primarily, it would require a clear identification and provision of publicity about the characteristics of bushfire arsonists, so that members of the public in bushfire prone communities could play a proactive role in attempting to keep their neighbours safe. It would require the media to highlight the characteristics of arsonists. It would also require that the media help provide a rationale for those in local communities who were suspicious to come forward with their suspicions to Crime Stoppers.

Prof Chubb said that the absence of the media from the field of arson prevention was very striking. When the police and Crime Stoppers attempted to run a campaign on prevention in early February, the media was very slow to give them the publicity that would help. The police/Crime Stoppers campaign received very little attention. On February 6 2010 the *Herald-Sun* in Melbourne ran a small story which said this:

> VICTORIANS will be asked to dob in a firebug to prevent a repeat of the Black Saturday disasters.
>
> Police today will launch a new campaign to encourage people to report any suspicious activity or behaviour.
>
> It comes after Black Saturday police investigations revealed many people harboured suspicions of others even before fires were lit.
>
> Det Supt Paul Hollowood said the Extinguish **Arson** Campaign was timed to coincide with the worst of the February/March fire season.
>
> People will be able to anonymously call Crime Stoppers on 1800 333 000 to enable them to thwart potential crime.
>
> "We're asking people to report any information – no matter how insignificant they think it might be – to help stop arsonists in their tracks," Det Supt Hollowood said.
>
> "Fires have an absolutely devastating effect – they destroy homes, decimate wildlife and in worst-case scenarios kill men, women and children."
>
> The campaign is aimed particularly at high-risk fire zones, especially in the country.
>
> While the stereotype is that arsonists are strangers, Det Supt Hollowood said this often wasn't the case.
>
> He said investigating some of the fires had revealed that some people held suspicions about possible offenders before fires were actually lit.
>
> "Doing some of the Black Saturday investigations, it's amazing the number of people we come across who say, 'We always suspected this person as being involved in lighting fires', Det Supt Hollowood said. "So it's trying to convince people you can tell somebody."'

But *The Age*, despite the enormous focus on bushfires at the time, since it was the first anniversary of Black Saturday, did not run the story at all. ABC television in Perth, Adelaide and Brisbane quoted Detective Supt Hollowood in their "wrap stories" on February 7, but he did receive any mentions that directly related to the police prevention initiative.

Prof Chubb noted that the media also be appears to be a party to the perpetuation of what some involved in the bushfire community call "the elephant in the room". This is in reference to the fact that some members of rural fire brigades, particularly volunteers, had been charged with bushfire arson. For example, a search of the media files over the past two years uncovers virtually no general discussion of this, except when arsonists who also have CFA connections are charged or brought before the courts or, in one case, when it

[*] Study of Melbourne newspapers and national television coverage; all instances where search terms bushfire and arson were found.

became known that police were investigating a prominent and senior CFA member as a suspect in the terrible fires at Marysville on Black Saturday.

While this publicity needs to be understood in terms of the importance of maintaining a volunteer workforce, there is a strong argument to suggest that, if it is thought the media should be assisting with bushfire prevention, then open discussion of the characteristics of bushfire arsonists is required.

Mr Sprott also addressed the issue of prevention. He said that from the perspective of Crime Stoppers, there was not much point going to the public for assistance unless the community could be provided with an idea of what was being looked for. The problem was being clear on the characteristics of bushfire arsonists and also being clear on how specific it is possible to be. Mr Sprott provided some examples of the profiles of arsonists. They are, in general (although not always):

- Male, racially white and aged in their 20s.
- Poorly educated
- Socially dysfunctional
- Alcohol or drug abusers
- Fascinated by fire, or thrill seekers

He said that Crime Stoppers usually found the media "pretty cooperative" once there has been a fire and police suspect arson. "The news media is generally happy to help police, or Crime Stoppers, to get the message out there that we are seeking information from the public about suspicious activity.

"But the bigger challenge is to get people to act. Take this urban myth – or actually more of a rural myth.

"It sounds relatively straightforward, but unlike, say, asking people to report individuals who are dealing drugs or carrying concealed weapons and so forth, asking people in small, tight regional communities to "dob" in someone they know and who they also suspect to be a firebug is more difficult proposition.

"Anecdotally, there seems to be a belief or general opinion in regional communities that firelighters come from other places.

"People who live in the area understand the risks and would never start a fire.

"It is people from the city or big towns who come here, away from where they live, to set the bush alight.

"But is it? Not according to the Victoria police arson squad. It would seem that it is more likely to be a local who starts a fire deliberately than someone from somewhere else.

"This goes to the heart of the communications problem. Over 22 years, Crime Stoppers has seen a consistent change in what has been termed "the dobber mentality".

"We are confident that most people who have knowledge about crime will call Crime Stoppers, even if they would never go to police directly. Confidentiality is the key to this. But we're not so confident about this when it comes to bushfire arson.

"In a tight-knit community, or a workplace, a school or a local footy club, people get to know each other well. They may discover that they suspect one of their friends or colleagues of being a firebug. But reporting them is another matter."

In his address to the workshop, Mr Sprott also examined:

Do extensive media fire danger warnings have an impact on potential arsonists?

"If a firebug hears that this Saturday we are expecting northerly winds, a maximum temperature in the mid-40s and extreme fire conditions, perhaps he is more likely to try to light a fire that day. In my view that cannot deter in any way authorities and the media from warning the public of the danger, but an accompanying deterrent message may help to an extent. And media is generally pretty happy to do this."

Copycats

Mr Sprott said that starting a fire was not that complex and the reality is that once an individual decides they are going to do this, they will do it regardless of what they see on television. They'll find a way.

Other influences of the media

Mr Sprott noted that in general he believed that the media had acted responsibly after Black Saturday. He also believed it possible that people may suffer "bushfire warning fatigue". He said he thought the ABC had done a "superb job" over summer "But I do wonder if the reports can be overdone, or at least are too repetitive." Does this fatigue also apply to warnings or public requests to watch out for suspicious individuals who might be arsonists? Could there be a "the boy who cried wolf" issue here?

Key issues raised in the discussion

Discussion centred on the role of the media in reporting bushfire events, its role in prevention and whether it could be convinced to highlight prevention more than it does currently. Questions of whether there are differences in how to approach new media than traditional media for assistance and whether an advertising campaign on bushfire arson, along the lines of the Transport Accident Commission road safety campaigns, would be useful.

Detective Supt Paul Hollowood noted that the media was not present at the workshop. He said he believed that in the context of Black Saturday the media had too often behaved badly. He also noted that it was sometimes impossible to get the media to respond to appeals for information.

Prof Chubb told the group he believed that an appropriately structured campaign designed to get the media to respond to the arson issue, and in particular prevention, would be quite capable of succeeding. He said that while falling back on a TAC-type approach could also be a successful, the capacity of the media to run with arson campaigns should not be underestimated provided they were given the required information. The fact that the police and Crime Stoppers campaign in early February 2010 did not work well could be attributed to it being in direct competition for space with the anniversary of Black Saturday and thus misguided timing.

Prof Chubb pointed out that in the aftermath of the fires issues of fuel reduction had run in the media to a much greater extent than arson. “But arson is also an emotive issue quite capable of attracting widespread media attention.” He said that the media needed to be given information which was specific and real.

Some workshop participants noted that they sometimes fielded calls from the media on arson issues, and that when asked “what are we looking for?” they found it difficult to answer. One said his answer was “suspicious activity”. This is not an approach which will assist in drawing the media on side in campaigns against bushfire arson.

A number of workshop participants noted the unwillingness of some fire agencies to discuss the problem of fire-lighters in their midst. What many regarded as a positive suggestion was made by one participant. This was that the fire agencies themselves should conduct an internal education campaign on both recognising arsonists and also promoting the commonsense view that the interests of the agencies were best served by identifying and treating fire-lighters rather than pretending they were not there. There is no reason for anyone to believe an entire agency should be tainted by the fact that a few of its volunteer members are also arsonists. Properly directed education campaigns run internally, it was felt, could overcome any morale problems which arose as a result of a frank recognition of the problem of arson.

The discussion may be summarised as follows:

‘Role’ of media

There are two main roles the media could play in relation to bushfire arson prevention:

1. Get message out to community to look out for arsonists and report any suspicious behaviour (e.g., the Crime Stoppers campaign last summer)

2. Get message out to politicians and decision makers that this is an issue of high importance to the community and needs more resources

Prevention/reporting message

- Identifying the appropriate prevention message and the appropriate audience is not straight forward, as there is no clear profile of an ‘arsonist’ – it is therefore hard to define what the community should look for. “Suspicious behaviour” might be as specific as we can get. Or, given that most of the time local people know who the arsonist is, the message could be “you know who it is”.
- Regardless, it is very important to target message/mode of delivery to intended audience, and to undertake a multi-agency approach that includes police, fire agencies, and any other important local organisations.
- People often know who the offender is but are reluctant to come forward. Most arson happens in urban fringe or rural areas, where communities are small and everybody knows each other. Locals – including in some cases the local fire brigade – often feel that if they dob on their neighbours they will compromise the well-being of the whole community. In other words, they feel that they have to make a choice between protecting their community and preventing a bushfire. Given this, it is very important to provide opportunities for anonymous reporting. It is even more important to convey the message to communities that

every fire has the potential to become catastrophic, and that therefore every case of arson has to be taken seriously.

- There is some anecdotal evidence that arsonists target high fire danger days. CFA attended more suspicious fires on high fire danger days and convicted arsonists admitted in interviews that they waited for hot days. There is also generally a lot of anti-social behaviour on hot days. However, clearly more research is required into whether this is a real phenomenon and if so how to solve it – e.g., through guidelines like for reporting on suicide?
- Copycat arson does exist but there is very little data about it. They appear to get a thrill out of seeing themselves in the media.

Targeting policy makers

- Given the costs of arson, there is a need to elevate this issue in policy-makers' agenda. If the media is not interested, it is hard to get policy makers interested, and therefore hard to get more resources to improve prevention efforts. To reach politicians and get more resources, we need to be clear about what resources are needed and for what.

Media as delivery mode

- As the commercial media's main concern is to get high ratings and make profit – rather than deliver a public service – there are many challenges with relying on it to convey the prevention message to the community or decision-makers.
- The media is generally only interested in bushfire arson only when arsonists are caught/charged or when a fire is happening. They have very little interest in the prevention message. For example the launch of the Crime Stoppers campaign received only 400 words in the Herald Sun plus a little bit on TV as part of Black Saturday anniversary coverage – and if we couldn't engage with the media after Black Saturday, what hope do we have now? One possibility is to take advantage of heightened media interest during fires and get the message out then. However this is not a consistent or reliable approach.
- If engaging with traditional media is too problematic, it may be useful to consider alternatives. There are two options: (1) paid advertising – like TAC campaigns; and (2) not to use the media but use something like the internet instead. However, as there is a need to target politicians and decision makers, who use more traditional media, it is impossible to avoid engaging with traditional media.
- New media (e.g., internet) may be more appropriate for reaching some target audiences, for example young people. But this must be done properly (i.e., using appropriate conventions and style of the users), otherwise it could back fire.

Firefighter arson

- The media often reports on firefighter arson, as it is a sensational topic.
- Some fire services are very reluctant to address issue. This may be an organisational culture issue – e.g., even at the station level. However, it is crucial for fire services to show they are dealing with this issue – to improve their public image ("the system of checks works"), to give the message internally that people can't get away with it anymore, and to encourage peer monitoring. There are several successful examples where internal education about the importance and benefits of preventing firefighter arson were implemented. In NZ there was also a problem with firefighter arson, but now they do criminal checks (given evidence that arson occurs as part of a cluster of other crime types). This made huge a difference.
- It is important to balance messages and checks for firefighter arson prevention with the need to retain and recruit volunteer firefighters.

Conclusions and recommendations

- Where **are** we now and where would we like to be in five years in relation to this aspect of bushfire arson prevention?

Bushfire arson is obviously an issue of critical importance to the community. The media currently has no role in prevention. It would clearly be desirable if the media were able to be brought on side to make an appropriate contribution to bushfire prevention strategies to be developed in the next five years. Exasperation with media behaviour during bushfires is evident among policymakers. However it is considered likely that an appropriately formulated strategy to engage the media would be very successful.

- What are the main gaps, and which ones should be addressed as a matter of priority?

There is an urgent requirement for interested parties to work with the media on a common strategy for the prevention of bushfire arson. It is recommended that work commence on the development of this strategy.

- What do we need or need to do in order to address the priority gaps?

Hard information on the role of the media is virtually non-existent. It is important that these gaps in our knowledge be filled prior to the commencement of strategic development. Opinions on the role of the media as presently performed, for example, differs significantly between personnel in the same agency. It is clear that even those working very closely in the field have different perceptions.

What factors affect a community's arson potential?

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Background

This workshop focused on recent criminological contributions from the Project of Human Development in Chicago Neighbourhoods and their applicability to understanding the spatial dynamics of crime and disorder in Australia. In particular, we examined the utility of social process theories, such as collective efficacy, for explaining fire related incidents like malicious hoax calls (MHCs). In spite of the serious penalties associated with MHCs and the significant costs of MHCs to the community (both financial and the potential harm to citizens), criminologists have all but ignored this phenomenon. Instead the limited research that does exist is found predominantly in the geographical sciences and here only a few studies have specifically set out to explore the prevalence and distribution of MHCs. Consequently, little is known about these incidents. Moreover, it is unclear whether the spatial distribution of MHCs follows that of other crimes like violence, burglary or property damage. It is possible that the same community level factors that predict violence or property crime, might also predict rates of MHCs. As there is some suggestion that young people are likely to be the perpetrators of these crimes and drawing on the recent collective efficacy it may be that cohesive communities with high levels of informal social control will experience fewer incidences of MHCs.

Drawing on data from a survey of residents across 82 Statistical Local Areas (SLAs) in South East Queensland (SEQ), census data, police incident reports and fire incident data from the Queensland Fire and Rescue Service, we employed spatial and regression techniques in this workshop to examine the key spatial, socio-structural and regulatory characteristics of SLAs that lead to higher rates of malicious hoax calls for fire service. We find strong visual evidence of a spatial concentration of MHCs that extends beyond the central business districts of large cities. We also find there is a significant relationship between the socio-economic profile of SLAs in SEQ Region and the prevalence of MHCs where MHCs are significantly higher in areas characterised by low income households. However, when we examine the variation in MHCs across a subset of largely residential areas, two interesting patterns emerge. First, when we model the relationship between social structural characteristics and MHCs in a sample of urban residential communities, poverty is not a significant predictor of the prevalence of this crime when other control variables are entered into the model. The second interesting pattern to emerge from this research relates to the spatial variation in social processes. Although the socio-demographic characteristics of SLAs may not increase the likelihood of MHCs, the variation in its incidence is strongly connected to collective efficacy. MHCs were significantly lower in SLAs where residents share a working trust and a willingness to engage in prosocial activities. This finding strongly supports the argument that key social processes, like collective efficacy, not only mediate the effects of disadvantage on crime but are the most proximate mechanisms for explaining its occurrence. Considering the significance of collective efficacy in predicting MHCs in the absence of a significant relationship between the prevalence of the incident and levels of disadvantage provides further evidence that a shift in focus from static socio-demographic indictors to dynamic social processes is needed in order to explain the variation in social problems across space and place in contemporary urban areas.

Key issues raised in the discussion

There were two key issues discussed among the participants of this workshop at the conclusion of our presentation:

1. The importance of developing a stronger relationship between fire services and academia.

   As our research on MHCs demonstrated, community and social processes matter in explaining the variation in MHC incident prevalence across place. Currently, understanding the spatial distribution of arson and other fire related incidents tends to take a situational crime prevention approach rather than thinking about other social processes that may be at work in communities with high levels of reported incidents. However, there was a suggestion that the community would have a variable effect on the incident rates different types of arson risk. For example, community characteristics and processes might be less important for understanding recidivist arson.

2. The value of a multi-agency approach between police and fire services as it relates to data collection and crime prevention strategies.

   This was viewed as important in determining whether fire related incidents such as MHCs, suspicious fires (unproven arson) and arson follow similar spatial, social-structural and temporal patterns with other types of crime. Moreover, we considered the value of multi-agency approach like the UK, Crime & Disorder Reduction Partnerships (see: http://www.crimereduction.homeoffice.gov.uk/regions/regions00.htm) in providing the framework needed for on-going data sharing protocols and a collaborative, yet targeted approach to crime and disorder that includes fire related incidents. However, there was some concern that there are limits to what can be asked of volunteer fire fighters, especially in remote locations.

Conclusions and recommendations

Currently, there is little criminological research outside the scope of situational crime prevention and rational choice perspectives that consider fire related incidents. The growing body of research into collective efficacy suggests that a failure to address local problems is more to do with deeply embedded social cultural processes that hinder a community's capacity to respond to particular problems associated with maintaining order. It is possible, therefore, that high levels of unproven arson are not merely the result of social structural deficits of a given area, but might be better explained by key social processes known to mediate the effects of disadvantage. Therefore, any crime prevention initiative aimed at reducing fire related incidents must proceed by considering both the spatial concentration of incidents and the processes that are important in reducing their occurrence if there is to be any long term reduction effect. We would suggest that the spatial and temporal dynamics of fire related incidents and their relationship to social processes must be better understood in order to more accurately predict their occurrence and effectively reduce their prevalence.

The next step in our program of research is to ascertain whether the prevalence of other fire-related incidents, like suspicious fires can be explained, at least in part, by the regulatory capacity of the community. Moreover, there is a need to consider whether the processes necessary for fire incident reduction are different in rural and regional areas when compared to urban or peri-urban environments. Presently, there are several large surveys that examine the regulatory capacity of urban neighbourhoods, but challenges to generating and maintaining informal social control in rural and regional environments are understudied and not well understood. Finally, future research will also consider the ways in which community based interventions might be designed to promote greater collective efficacy to respond to fire related incidents in disadvantaged communities. For example, in communities where collective efficacy is low, it may be more worthwhile for fire services to engage members of the local community in a more focussed way. A program geared toward facilitating a generalised trust among a working group and the provision of task specific, skills-based training opportunities might be more likely to reduce the prevalence of fire related incidents developing an educational campaign associated with arson reduction.

Urban & environmental planning for reducing the risk of arson

Dr Paul Cozens *(Curtin Research Fellow, Design Out Crime Research Centre, Department of Urban and Regional Planning, Curtin University of Technology) &* ***Warren Christensen*** *(Principal Advisor Strategy and Planning, Compliance and Investigations Branch, Qld Department of Environment and Resource Management)*

This workshop encouraged participants to adopt perspectives from environmental criminology to analyse and reduce the potential risk of deliberate arson at the urban fringe. These included routine activities theory (Cohen and Felson, 1979), crime pattern theory (Brantingham and Brantingham, 1981), rational choice theory (Cornish and Clarke, 1986) and situational crime prevention (Clarke, 1992). Specifically participants were asked to consider a range of situational crime prevention methods which could play a role in increasing the effort and risks associated with committing arson and in reducing the rewards on offer for potential arsonists. Within crime prevention some of these ideas are also known as crime prevention through environmental design (CPTED) and there is increasing evidence that these approaches can reduce crime (Clarke, 1992; 1997; Cozens *et al.,* 2005; Christensen, 2008). Ultimately, participants developed a range of place-based strategies to potentially protect against bushfire arson.

Background

Current knowledge and practice focuses almost exclusively on the offender. This includes work on profiling the offender, apprehending and punishment strategies and programs associated with the rehabilitation of offenders and mental health strategies. This approach mirrors a trend in criminology which similarly focussed upon the offender and not the place or crime situation. However, over the last twenty years, criminology has evolved to accept and embrace place-based and situational crime prevention, a trend which has not necessarily been followed with regards to the crime of bushfire arson. It is increasingly being recognised that crime prevention should embrace both perspectives. Although the symposium used the term 'prevention', it did not distinguish between, primary, secondary and tertiary crime prevention – and the content of most of the symposium focussed on secondary or tertiary prevention techniques (e.g. those directed at the problem AFTER it has occurred). This workshop discussed and promoted a consideration for strategies which could be use in preventing bushfire arson BEFORE it has happened.

Key issues raised in the discussion

The main issues that were developed in the workshop discussion concentrated on developing placed-based strategies to reduce bushfire arson, rather than offender-based strategies. Specifically, three key areas were probed – and each area was developed into sub-sections:

Increasing the risk for offenders – by developing strategies to extend guardianship, assist natural surveillance, reduce anonymity, utilise place managers and strengthen formal surveillance.

Increasing the effort for offenders – by hardening targets, controlling access to facilities, screening exits, deflect offenders and control tools for arson.

Reduce the rewards for offenders – by concealing targets, removing targets, identifying property, disrupting markets and deny benefits to offenders.

The discussion is summarised in the following table:

Increase the risk	Increase the effort	Reduce the rewards
Extend guardianship > Empower authorised users > Partnerships with NW schemes (2) > More park rangers > Increase mobile security patrols on days of extreme fire danger (5) > Create fire unit support close to designed areas (parks etc) > Covert patrols > Encourage use by other groups – walking, 4X4 and riding clubs (2) > Signage – contact details for other users of park (eyes on the street) > Resident 'buy in' > More community facilities	**Target Harden** > Plantations of fire-retardant vegetation > Mulching / weed control (2) > Increase firebreaks > Hazard / fuel reduction programmes (8) (burns offs) > Removal of stolen / dumped cars (3) > Remove rubbish / dumped goods > Increase presence of emergency services (training, patrolling) (2) > Greater community awareness > Good reporting systems > Greater presence of authority > More patrols > Vacant properties? > More surveillance > Limit access points > Raking / burn off along tracks / paths (2) > Urban planning > Fire prevention notices 10/30 > Local community ownership > CCTV	**Conceal target** > Limit access to high fuel areas > Signage > Open areas between target and public areas
Assist natural surveillance > Encourage use by other groups (2) > Fire brigade training in hotspot areas > Build ' ranger' office > Expand fire breaks > Remove places of concealment (blind / spots) (2) > Use straight lines for breaks / paths through forest areas (4) > Large cleared areas for picnics > Campaign to report suspicious activity > Better presented entry / exit points > Widen firebreak areas	**Control access to facilities** > Limit access on days of extreme fire / catastrophe (FDIs) (6) > Limit access to some areas permanently > Limit number of entrance and exit points (2). > Introduce fees – user pays to access > Install gates (2) > CCTV (2) > Increased security at schools / community centres (after hours) > Increase response times (2) > More patrols (3) > Sessionally close areas of parks to concentrate users > Set up programmes of activities (liaise with schools) > Close national parks on high risk days > Physical barriers around plantations > Authorised visitors > Signage to control access / use > GIS all fire-starts	**Remove targets** > Remove dumped / stolen cars (6) > Remove dumped rubbish (5) > Fuel / hazard reduction (4) > Fire prevention notices > Prescribed burn offs (3) > Make ignition devices difficult to obtain > Vacant houses > Limit access > Limit access > Prohibit BBQ or smoke / cigarettes into commercial forests and national park > Defensible space around houses > Widen access roads

Increase the risk	Increase the effort	Reduce the rewards
Reduce anonymity > Formal checks of visitors at park entry points (2) > Permit-only access (monitor via Facebook etc) > Random identity checks of visitors > Encourage use by other groups (car clubs, bushwalkers, orienteering) (2) > Restrict access at certain times / places (2) > Increased presence of park uses (authority) (2) > Patrols to drive near hotspots (2) > Provide after school activities / more activities > Design and plan new developments to promote visibility into proximal bush / forest areas > Media coverage (activity in area)	**Screen exits** > Police and fire presence in high visibility areas on days of extreme fire > Signage advising of regular patrols (overt and covert) > CCTV (overt and covert) at entrances and exits (6) "treecam" > CCTV controlled locally > Use traffic-speed, point to pint cameras > Card identity electronic entry / exit boom gates > Community engagement > Covert operations > More patrols	**Identify property** > Name the park or bush after the community to connect > Identify vehicles entering bushland / forest areas > Create a sense of ownership, not 'no-one cares' > 'Forest Watch'
> Utilise place managers > Employ precinct managers to nominate managers to coordinate security and patrols of nominated fire recruits > Education campaigns and community awareness (2) > Gather documentation of users (e.g. car registrations) > More community facilities at urban-bush interface > Use community guardians with rewards for patrols (no arrest powers) > Crimewatch – communities / forest workers / users > Encourage owners of private forests to increase forest	**Deflect offenders** > High-visibility signage identifying damage and risk > Signage – arson is a crime / crime stoppers, fire kills) > Signage – information / communication, Crimestoppers) (3) > Regular patrols (4) > Permits for entry > Gated entrances / exits > Provide alternative activities (what they enjoy) > Signage > CALD signage for non-English speakers	**Disrupt markets** > New Legislation on the sale of matches and lighters > Restrict sale of sparklers > Restrict sale of matches / lighters to children (2) > Reduce availability of ignition / incendiary devices and introduce fines > Ban sale of fireworks > Self extinguishing cigarettes > Age limits for sale of matches / lighters > Place mozzy strips under the counter > Manage sale of incendiary devices
> Strengthen formal surveillance > Infra-red (air-born) CCTV drones > Infra-red imaging > Increased patrols in places / times of extreme fire danger (3) > Covert and overt CCTV (4) > Signage (info for users) > Lighting > Government agencies to divert through risk areas as part of normal business > Open areas at access points	**Control tools / weapons** > CCTV in high risk areas > Infra-red aerial cameras > Community engagement / education > Covert patrols > NW or similar > Improve water points / install reticulated water > Cigarettes which don't ignite foliage > Control sale of lighter / matches to U15s? > Ban fireworks > Limit sale of some items > No matches / lighters allowed in parks – fines apply > No vehicles outside daylight hours > Modify access to arsonists tools (mozzy coils / age limits)	**Deny benefits** > Greater fuel breaks > During a fire, remove all bystanders to deny thrill of observation. > Increase penalties for arsonists > Reduce publicity after the event > Increase sense of community and role of peer pressure > Increase first response – reduce proximity to fire stations > No press / media coverage of the bushfires

Conclusions and recommendations

Various conclusions can be drawn from the workshop. Firstly, it is clear that participants value the use of place-based strategies to reduce opportunities for arson and that the collection of spatial / temporal data associated with ignition sites should / could be improved. This would also significantly improve both response strategies and the local use of place-based and situational crime prevention solutions. In five years time, the awareness, knowledge and use of such strategies should be greatly increased, particularly at the arson-prone locations such as the urban – rural fringe, national parks, forest plantations and along the roads / pathways which provide access. A significant hiatus which needs to be addressed is to develop an understanding of how routine activities theory (Cohen and Felson, 1979) can influence opportunities for bushfire arson. Crucially, a substantial proportion of incidents are related to how, when and where different groups of people (or individuals) move around in and around bushfire-prone areas. Linking such patterns with existing offender-based knowledge could do much to improve local knowledge and response and prevention strategies.

As a matter of priority, the collection and collation of geographical / spatial and temporal data on ignition sites needs to be looked at alongside the systematic collection of data relating to local land-use (schools etc) and transport patterns and connections (roads / paths). In addition, it is also important to develop a process by which zones on the edge of the urban fringe can be defined, designated and design to reduce opportunities for arson and develop a sense of ownership and control. Key concepts within the field of environmental criminology warrant consideration and further investigation including those identified within this workshop. These focus upon three key areas, and draw upon the sub-field of crime prevention through environmental design CPTED):

Increasing the risk for offenders – by developing strategies to extend guardianship, assist natural surveillance, reduce anonymity, utilise place managers and strengthen formal surveillance.

Increasing the effort for offenders – by hardening targets, controlling access to facilities, screening exits, deflect offenders and control tools for arson.

Reduce the rewards for offenders – by concealing targets, removing targets, identifying property, disrupting markets and deny benefits to offenders.

In order to address these gaps, national and state agencies need to acknowledge the potential contribution to arson reduction that place-based crime prevention can provide. Secondly, we need to develop the knowledge and expertise of a range of agency staff to establish frameworks for applying such approaches at the local level. Thirdly, the collection of spatial /temporal / land-use data should become routine and an everyday practice. Obviously, there will also need to be a significant injection of resources to facilitate these additional tasks and responsibilities. Finally, it is concluded that if we are to have any impact in reducing the opportunities for bushfire arson, we need to develop strategies which can be applied locally BEFORE bushfires have occurred. Placed-based strategies such as situational crime prevention and CPTED can clearly be useful in this regard. However, it appears that a paradigm shift may well be necessary before such common sense approaches become common practice.

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The Design Out Crime Research Centre in Western Australia – www.designoutcrime.org

Cost of bushfire risks: Property losses and fatalities

Professor John McAneney (Risk Frontiers, Macquarie University)

Background

We first normalise historical records of fatalities and property losses to account for changes in population and dwelling numbers since 1926 in order to estimate bushfire event losses had past events occurred under year 2008/09 societal conditions. The average annual normalised fatalities and building damage is 14 deaths and 296 house equivalents (HE) respectively. (HE include non-residential buildings by conversion to equivalent houses using relative floor areas and construction costs.) To this point in time, there is no discernable evidence that the pattern of losses is being influenced by global climate change. In other words, once we account for the changes that we know to have occurred since the time of historical events, there is no trend in the data that demands further explanation. In other words, the increase in bushfire losses is being driven by changes in demography. This is also the case with other natural disaster losses in other jurisdictions, in fact everywhere this issue has been explored as attested in some 30 published articles in the peer-reviewed literature. The 2009 Black Saturday fires rank second (fourth) in terms of normalised fatalities (building damage). The public safety concern is that of the 10 most damaging years the 2008/09 bushfire season ranks second, only to the 1925/26 season, in terms of the ratio of normalised fatalities to building damage.

Risk Frontiers' modelling of the insurance risk associated with bushfire is based on a number of inputs unique to Risk Frontiers including an historical data base of affected locations, the normalised property event losses referred to above, the spatial correlation between individual building losses due to fire and the *FireAUS* database that categorises building vulnerability based on distance from the nearest area of bushland greater than 0.5 km^2 in area. We explicitly chose to model the losses based on experience rather that the physical hazard because we believe a model of that type would have negligible skill given the uncertainties in fire ignition locations, wind speed and direction changes, fuel loads and mitigation efforts by fire authorities and homeowners, even though most losses occur in infrequent extreme conditions when fire control is not possible. Early outcomes from Risk Frontiers catastrophe loss model suggest that the Black Saturday fires to have an Annual return Interval (the average time between events of this magnitude) of approximately 40 years.

A feature of the building damage in the 2009 Black Saturday fires in some of the most affected towns – Marysville and Kinglake – was the large proportion destroyed either within bushland or at very small distances from it: 25% of all structures destroyed were located within 1 m and 60% within 10 m of bushland. Land planning policies in bushfire-prone parts of this country that allow such development are inconsistent with their public safety obligations. This has implications for the importance of arson because if, in this fire-prone country, buildings were not allowed to be constructed within 100 m of bushland, roughly 85% of buildings losses could have been prevented over the last century. As it is, about 550,000 addresses are located within 100 m of bushland in fire-prone areas of the country.

Professor McAneney is the Director of Risk Frontiers, an independent research centre at Macquarie University. Risk Frontiers is largely funded by the insurance industry to help it better understand and price catastrophe risks in the Asia-Pacific region. Risk Frontiers is increasingly involved in research devoted to emergency management. Professor McAneney's specialist expertise is in Quantitative Risk Assessment and Decision Analysis. His research background includes Environmental Physics, Weather Risks and Financial Risk Modelling.

Environmental-climatic impacts of bushfires in Australia

Professor Nigel Tapper *(School of Geography and Environmental Science, Monash University)*

Impacts of bushfire on some aspects of the environment, for example on bird or animal biodiversity, surface runoff and soils, are well represented in the literature. However this paper reflects on some of the less well known environmental (mainly climatic) impacts of fire, concentrating on some of the recent work on fire impacts undertaken within the Monash Weather and Climate Program. Some of this work is referenced below and some of the major findings are briefly summarised in the following paragraphs.

Landscape fire in Australia is spatially differentiated. To generalise, fire in the northern savannas is characterised by its high frequency (same area often burning every 1–2 years), low intensity and extensive nature, with low asset and human risk. Occurring in the dry season only, savanna fire is mostly associated with landscape management and/or recreational burning. This contrasts with fire in southern Australia that is relatively low frequency, high intensity and has potential for massive asset and human risk. Primarily these fires occur in spring and summer and are often associated with heat wave conditions. They are mostly caused by lightning strikes, accidental ignition and arson.

The environmental/climatic impact of landscape fire extends from the local to the global, including emissions from biomass burning, leaf to ecosystem carbon budgets, surface energy and water balances, local climate and boundary layer modification, including the triggering or enhancement of thunderstorm activity, and regional-scale feedbacks such as monsoon enhancement. Landscape fire, especially that associated with savanna burning is a major perturbation of global atmospheric chemistry, providing vast quantities of carbon, particulate and nitrous oxides to the global atmosphere each year with potential for altering global climate. Australia is a significant contributor to these emissions. Some of the uncertainty about impacts of fire on net global emissions of carbon centre on how much carbon is subsequently taken up again by the ecosystem. Our recent work in the Australian savannas has examined biosphere-atmosphere carbon exchange from the leaf to the landscape scale and suggests that whether or not the savannas are a net sink or source of carbon depends to a large extent on the frequency of fire – more frequent fire being associated with net loss of carbon.

Other aspects of our work have concentrated on the impact of fire (more specifically the post-fire landscape) on moisture and heat exchanges with the atmosphere. We have shown that alterations to surface albedo (reflectivity) of the surface, along with reduced evapo-transpiration associated with leaf scorch and fall following fire, dramatically increases sensible heat inputs to the atmosphere. This provides warming to the atmosphere adding to instability that can potentially trigger or enhance thunderstorm activity over and downwind of fire scars. Such thunderstorms can substantially add to the issue of environmental recovery after bushfires, because high intensity rainfall onto denuded landscapes can result in flash flooding, erosion and on occasion loss of life. At much larger scale we have also shown that the extent of landscape burning can influence the intensity of the Australian summer monsoon. Monsoon onset and intensity partly depends on the extent of surface heating over northern Australia that changes environmental conditions in favour of the monsoon. Our modelling has shown that extensive burning v's not burning the landscape produces a much stronger monsoon circulation over northern Australia along with enhanced precipitation.

The very serious impacts of fire on community and infrastructure are well recognised. However recent work such as that described above suggests that there are many broader implications of bushfire that should also be considered and understood.

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Improving the knowledge base for bushfire arson

Warwick Jones *(Australian Institute of Criminology) &* ***Sgt Amy Gledden*** *(Victoria Police Force)*

Background

There are two great traditions of criminology; one that focuses on the offence, the other that focuses on the offender. These require different types of data systems.

Offence data systems. The objective of the structure outlined in Figure 1 is to take advantage of the patterned nature of the offence to allow investigations to be more strategic, inform a proactive response that allows fire agencies and police to be in the right place at the right time and to better target community interventions.

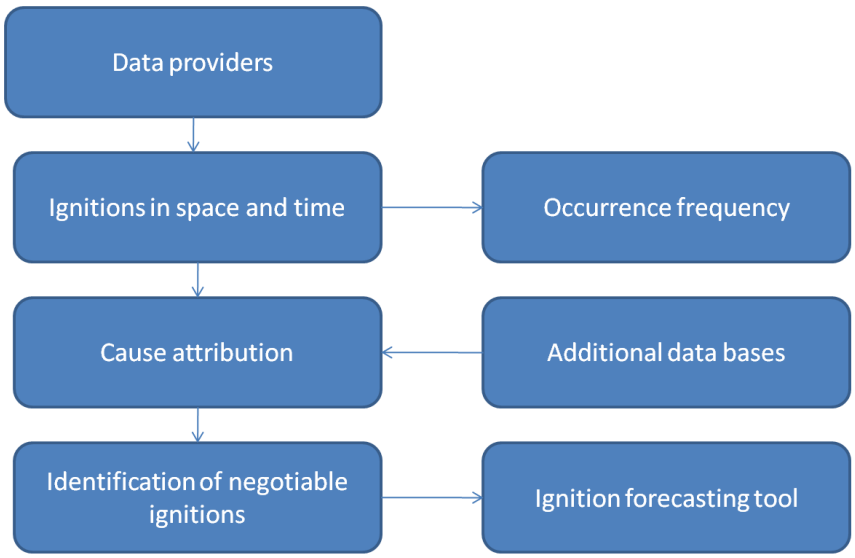
Data providers are often thought of as fire agencies and police but experience with community workshops has shown that additional fire data is also held by land management agencies, education authorities and local government.

A record of ignitions in space and time is the foundation of the offence systems. The more comprehensive this is, the higher the potential for pattern recognition. A Geographic Information System (GIS) can record both space *and* time and also provide a data visualisation facility in a form that is readily comprehensible, usually a map. While the attention with multi agency GIS data has been on the on the compatibility of the different software systems, a more serious problem is that some fire agencies are outputting their data in categorical form, e.g. ignitions per postcode or fire district. Data in this form is impossible to integrate with other data and is of little use. If ignition data is geocoded i.e. outputted as a geographic point and a specific time recorded, then it is compatible with other ignition data and also with other risk management tools such as fuel loads, fire weather, slope, access etc. It is important to note here that this only provides an ignition projection tool that takes past ignition patterns and projects them into the future.

Cause attribution is currently the most problematic areas in bushfire arson data. Averaged over Australia, the causes of half of all ignitions are recorded as unknown though this can vary from ten percent in some areas to more than seventy percent in others. A study of nearly 300,000 ignition records by the AIC indicates that that ignitions seem to cluster in space and time and it may be possible to use this characteristic to increase attribution rates using proprietary GIS software.

The integration of additional data sets with ignition data sets may improve cause attribution rates and also help uncover some of the dynamics behind bushfire arson. A real world example of this is a spike in late afternoon fires and a close relationship between where these ignitions occurred and single parent families with children under fifteen. This association suggested that schools should be a target of prevention measures.

Figure 1: Data structures for offence data



The cause attribution is important for two reasons; first, it indicates which ignitions are due to deliberative choice and thus are amenable to prevention measures. Second, an understanding of the dynamics behind ignitions is critical to the ability to forecast where they will occur i.e. the development of an ignition forecasting tool.

Offender data systems. The objective of the offender data systems is to keep track of convicted arsonists and persons of interest for two main reasons; first law enforcement and second because we currently know so little of arsonists' psychological, demographic and socio-economic profile. The current structure is outlined in Figure 2.

There are currently two basic problems with this system. The first is on the fire agency/police/CrimTrac axis. Fire agencies generally have little power to identify potential suspect or persons of interest in Australia despite the fact that they are often in the best position to do so. Many, if not most police services in Australia, have serious problems integrating a consistent recording of persons of interest into their bushfire arson data structures. This spills over into CrimTrac recording where the data base appears to fall short of its potential.

The second problem is on the Court, corrections, clinical psychologist axis. The root of the issue here is that we convict so few arsonists that it has been very difficult to get a sufficient sample to make meaningful generalisations even if corrections were to allow access.

Victoria Police data systems. The 2009 fires illustrated many of the issues outlined in the data systems discussion above:

- A reporting template suited mainly to structural arson.
- Ignitions underreported and significant reporting time lags.
- Low quality data with many blank fields.
- Lack of integration between different ignition types.
- Absence of historical data on persons of interest.
- Limited data that would allow useful profiling.

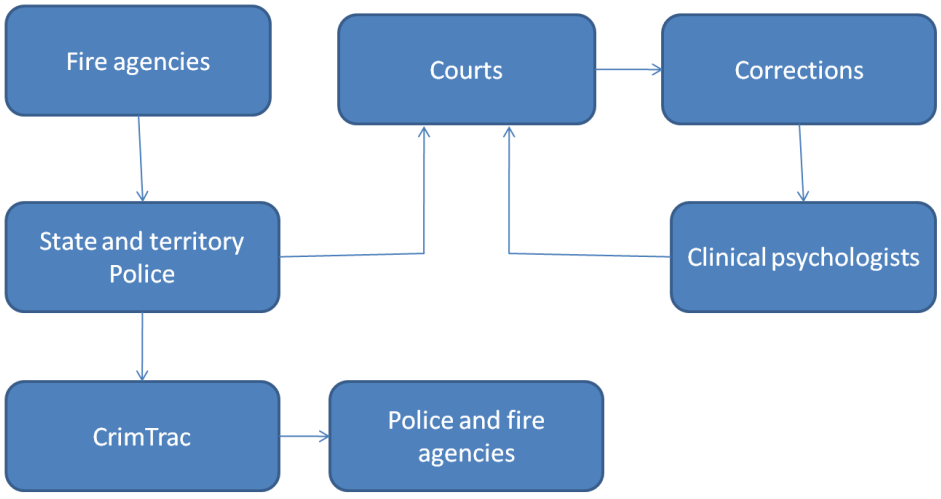
Key Issues

The first issue raised is can we pay for better systems and should we pay? The rationale behind this question was whether it was possible to reduce bushfire arson incidence down to levels that would justify the expense. This question focused discussion on the risk management aspect of better data systems. In other words, how do we use data to both assess ignition risk and mitigate that risk?

Discussion then turned to the dual role of current data systems; detection and prevention. Many believed that the current systems were too heavily focused on detection rather than prevention and that prevention should carry more emphasis. The natural tension in the requirements of police and fire agencies from data systems was regarded as both as a challenge and potentially, a balancing force.

The differing legal frameworks surrounding bushfire arson was raised as a difficulty in integrating data sets. There was a divergence of view on how serious

Figure 2: Data structures for offenders



a problem this was. Some argued that the critical definition of intent varied greatly between jurisdiction and what may be called arson in one jurisdiction was criminal damage or injury in another. Others maintained that the general principles behind the legislation across jurisdictions were sufficiently similar to enable a coherent data system between jurisdictions.

The role of corrections in enabling access to convicted arsonists was also raised as a critical element in developing better data systems.

Privacy and the related issue of data access was the final issue discussed. The general view was that there needed to be a cascading access provision to any data base. For example, addresses could appear as specific points at one data layer with limited access and an interpolated point (randomised within a specific radius) in a layer with wider access.

Conclusions and recommendations

There was a strong view in this workshop that there should be a national data system but that this system should be developed with the awareness of the tension between comprehensiveness and data quality. Drawing on the Australian Incident Reporting System experience, many felt that comprehensiveness was worth sacrificing for better data quality. The major recommendation of the workshop was that there be *minimum national standards of interoperability* in recording bushfire arson ignitions. This would include a commitment to outputting ignitions as geocodes, precise timing and minimum cause attribution protocols.

Also recommended was the development of improved systems to provide historical data on offenders and persons of interest and allow the tracking of them between jurisdictions.

The impact of bushfire arson on insurance

Laurie Ratz *(Special Risks Manager, Insurance Council of Australia) &* ***Phil James*** *(RACV Insurance)*

Background

The Insurance Council covers about 90% of the industry. About $100 million claims are processed each working day.

Arson and in particular Bushfire related arson cost the general insurance industry millions of dollars each year. The total insurance cost of the Victorian Bushfires of January and February 2009 was estimated at $1.07B. The insurance industry works closely with law enforcement and other government agencies to assist where possible to prevent and detect the perpetrators of arson and bushfire related arson. This workshop intends to explore the most effective ways for the general insurance industry to deal with bushfire arson and how the crime impacts upon insurers and in turn the consumer. It is also necessary to understand the various types of insurance products available to the consumer and the impacts of non-insurance and under-insurance. Preventative measures currently employed by the insurance industry include the Arson Reward Scheme and an industry working group known as the Economic Crime Insurance Working Group.

Key issues raised in the discussion

- Impact of the Victorian Bushfires on the general insurance industry
- The current types of insurance which provide cover for damage by fire (criminal or otherwise)
- How Insurance companies identify and rate risk
- The Insurance Council Arson Reward Scheme
- Information sharing between the insurance industry and law enforcement and implications of Privacy Legislation
- Some points discussed
- Bushfires are not at present a high cost on insurance risks, but they are there. There is a risk that if fire events become more common premiums will rise as the risk is re-rated.
- A significant issue is under-insurance, particularly in house content. Additionally, the cost of re-building is higher because bushfires are so encompassing.
- A significant event in one state may not impact on customers in other states, but may eventually.
- It may be possible to give discounts to some people who make their home safer – a need to work with local government around this issue.
- There was discussion as to whether there was a trend increase in disaster losses over time, where some felt this wasn't the case.
- There may be a need to supply insurance on business interruption as this year people are not going into bushfire areas and there is an impact on businesses, on tourism. There is also an issue in relation to farm insurance with some consumers not insuring fences or machinery.
- The insurance industry finds problems with investigating bushfires due to privacy principals. It was questioned about the role of the insurance industry here. The Arson Reward Scheme needs work. At the moment the maximum reward is $50,000 for information on a fire which has already occurred. It was agreed that the Insurance Council should consider additional activities to further promote the existence of the Arson Reward Scheme.
- The insurance industry hasn't had an in-depth look at bushfire arson. This has resulted in a sharpening up of prevention measures, especially power companies. Fire services can sue for the cost of putting a fire out. Similarly in NZ, there has been costs against an operator who started the fire. In ACT there has been a class action to an insurance company for failure to control a fire.
- Need to have a debate about whether we should be advising people not to live in certain areas. There could be an increase in premiums for areas of greater risk. At present some insurers provide a discount to those who clear around their house and undertake fire training, however this is based on an honesty system. . Pricing could move to a more sophisticated system of satellite mapping of location.
- Severe insurance-related events have been occurring 1:3 years, now 1:2 years. Need to identify where incidents occur more frequently.
- There is a need for communities to band together to take action to reduce the event occurring. This needs to be accompanied by a need to lobby government to undertake better planning so housing-estates are not build in high-risk areas.

- People need to be more aware of their insurance coverage and improve their coverage. However, many people would not be aware of their under-insurance and it is not until their premiums go up that they take reducing risk seriously. There is generally a low perception of the risks they are taking.

Conclusions and recommendations

The feeling from the workshop was that the group was only just opening up many of these issues. A great deal more work is needed on many of these topics and on the role of the insurance industry in preventing and investigating arson.

Assessing ignition risk in time and space

Dr Jonathan Corcoran *(School of Geography, Planning and Environmental Management, The University of Queensland) &* ***Warwick Jones*** *(Australian Institute of Criminology)*

Background

The use of geographical techniques to explore fire related topics has seen much less research and operational application than the equivalent within policing environments[*]. Whilst there is a body of work that has looked at various geographical aspects of bushfires (in general), little work has been explored the dynamics of bushfire arson that integrates both bio-physical information with socio-economic and cultural data. Combining spatial data describing the bio-physical and socio-economic and cultural environments along with incident databases from key agencies (for example the fire and rescue services and the police) is likely to hold great potential in understanding the dynamics and drivers of bushfire arson.

A key technology to permit the integration and subsequent visualisation of the spatial databases are Geographical Information Systems (GISs) (see web link for definition and description of a GIS http://en.wikipedia.org/wiki/Geographic_information_system). A GIS permits the various spatial databases to be imported in the software as a series of layers (Figure 1) that can be viewed in a single mapped output. The central empowering feature of GIS technologies is the data, where the greatest benefits are sought when multiple formerly disparate databases are integrated, analysed and visualised within the single GIS system.

There are examples of the application of GIS in areas such as vehicle dispatch or in identifying suitable locations or boundaries for fire stations (see, for example, Neely & Neal, 2002). More broadly Ormsby (2005) provides some recent examples of the wider use of GIS within the fire service including prevention through targeting buildings for inspection.

Key issues raised in the discussion

Two main issues were raised in the discussion.

- Geographical patterning – The importance of visualising the *geography of bushfire arson*
  - The value of a geographical approach to begin to understand the social ecology as well as the spatial dynamics of bushfire arson and its variation over time (see Map animation, (2010) for an example of a valuable technique to visualise space-time patterns).
  - The identification of relevant geographical tools and techniques.
  - The need to use disaggregate level incident data (where collected) to enhance the spatial granularity of the visual outputs and improve predictive model outputs
- Spatial Data integration – The value of combining multiple spatial databases to evolve a more *holistic* view of bush fire arson.
  - The identification of salient spatial databases.

Conclusions and recommendations

- *Where are we now and where would we like to be in five years in relation to this aspect of bushfire arson prevention?*
  - Towards a holistic framework
    - UK, Crime & Disorder Reduction Partnerships (Local authorities, Police, Police authorities, Probation, Health Authorities)[†] – (see reference below)
    - Ongoing data sharing protocols (e.g. the UK's, Crime and Disorder Act 1998)
  - The value of a multi-agency approach
    - A need to think about bio-physical and community processes that lead to fire

[*] Corcoran, J., Higgs, G., Brunsdon, C., Ware, A. and P. Norman. (2007) "The use of spatial analytical techniques to explore patterns of fire incidence: a South Wales case study." *Computers, Environments and Urban Systems*. 31 (6) 623-647.

[†] The UK's Crime and Disorder Act 1998 formally introduces the creation of multi-agency Crime and Disorder Reduction Partnerships (CDRPs) within each local authority area. A legal obligation is placed on CDRPs, particularly the local authority and police to work in tandem to develop, publish and implement three-year strategies to tackle crime and disorder. Each audit, comprising of multi-agency data and community consultation, attempts to encapsulate the community dynamics within a given area. In addition, the Act stipulates the necessity to work with other key agencies, including the health authority, (Sections 5-7, Crime and Disorder Act 1998) whilst Guidance recommends the expansion of the partnership to business and voluntary sectors.

        - Development of more compete risk profiles at a disaggregate level of geography
- *What are the main gaps, and which ones should be addressed as a matter of priority?*
    - Introduction of data sharing protocols
    - Identification of key spatial databases, their guardians and key contact personnel, derivation of common metadata standards
    - Introduction of spatial data repositories for access by accredited agencies and research groups
- *What do we need or need to do in order to address the priority gaps?*
    - Establish *best practice* initiatives initially at the individual Fire or Police service area level that permit the digital exchange of spatial data between key agencies (for example, police and fire services). Once in place the number of organisations involved can be expanded to include addition fire and police jurisdictions in addition to local authority and parks and wildlife agencies.

References and additional resources

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Appendix A: Symposium Program

Day 1: Thursday, 25 March 2010

8:30–9:15	**Registration**
9:15–11:15	**Opening Plenary and Keynote Presentations**
9:15–9:30	Welcome
9:30–10:00	Opening address: The National Action Plan to Reduce Bushfire Arson in Australia *The Hon. Robert McClelland, MP (Attorney-General for Australia)*
10:00–10:30	An overview of bushfire arson in Australia *Dr Adam Tomison (Australian Institute of Criminology)*
10:30–11:00	The psychology of bushfire arsonists *Prof. James Ogloff (Centre for Forensic Behavioural Science, Monash University)*
11:00–11:15	Notification of workshop arrangements
11:15–11:30	**Morning Tea**
11:30–13:00	**Concurrent Workshops**
	The motivation for bushfire arson *Dr Troy McEwan (Centre for Forensic Behavioural Science, Monash University) & Dr Damon Muller (Australian National University)*
	Improving multi-agency approaches to arson prevention *Chris Lewis (NSW Fire Brigades)*
	Assessing human, economic and environmental risks of bushfire arson *Prof. John McAneney (Risk Frontiers) & Prof. Nigel Tapper (Monash University)*
13:00–13:45	**Lunch**
13:45–15:15	**Concurrent Workshops**
	Juvenile arson: Early prevention and intervention *Prof. Mairead Dolan (Centre for Forensic Behavioural Science, Monash University) & Dr Janet Stanley (Monash Sustainability Institute)*
	Improving the knowledge base for bushfire arson *Amy Gledden (Victoria Police) & Warwick Jones (Australian Institute of Criminology)*
	The media and bushfire arson *Dr Phil Chubb (Monash University) & Peter Sprott (Crime Stoppers)*
15:15–15:30	**Afternoon Tea**
15:30–17:00	**Concurrent Workshops**
	Treatment and intervention with juvenile firesetters *Penny Wolf (Country Fire Authority) & Kate McDonald (Victoria University)*
	The evolving legislative response to bushfire arson *Dr John Anderson (Newcastle University) & Dr Gaye Lansdell (Monash University)*
	The impact of bushfire arson on insurance *Laurie Ratz (Insurance Council of Australia) & Phil James (RACV Insurance)*
17:00	**Close**
17:15–18:30	**Informal Drinks**

Day 2: Friday, 26 March 2010

8:30–9:10	**Registration**
9:10–11:00	**Plenary Keynote Presentations**
9:10–9:15	Welcome
9:15–9:45	Environmental criminology and the potential for reducing opportunities for bushfire arson *Dr Paul Cozens (Curtin University of Technology)*
9:45–10:15	What fire services around Australia are doing to reduce bushfire arson *Gwynne Brennan (Country Fire Authority)*
10:15–10:35	Distinguishing arson fires *Richard Woods (ACT Rural Fire Service)*
10:35–10:50	Notification of workshop arrangements
10:50–11:15	**Morning Tea**
11:15–12:45	**Concurrent Workshops**
	Recognising individuals at risk of committing arson *Dr Kate Fritzon (Bond University) & Dr Rebekah Doley (Bond University)*
	Effective arson detection and investigation *Richard Woods (ACT Rural Fire Service) & Paul Hollowood (Victoria Police)*
	What factors affect a community's arson potential? *Dr Rebecca Wickes (The University of Queensland)* *& Jonathon Corcoran (The University of Queensland)*
	Bushfire arson and the courts *Mark Woods (Tyler Tipping and Woods) & Dr Michael King (Law Faculty, Monash University)*
12:45–13:30	**Lunch**
13:30–15:00	**Concurrent Workshops**
	Treatment and intervention with adult offenders *Dr Kate Fritzon (Bond University)* *& Dr Troy McEwan (Centre for Forensic Behavioural Science, Monash University)*
	Tracking individuals at risk of committing serial arson *Dennis Mulroney (SA Police) & Julie Williams (SA Police)*
	Assessing the space-time dynamics of ignition risk *Dr Jonathan Corcoran (The University of Queensland)* *& Warwick Jones (Australian Institute of Criminology)*
	Urban & environmental planning for reducing the risk of arson *Dr Paul Cozens (Curtin University of Technology)* *& Warren Christensen (Qld Department of Environment and Resource Management)*
15:00–15:15	**Afternoon Tea**
15:15–17:00	**Closing Plenary**
15:15–16:00	Workshop report-back
16:00–16:45	Panel discussion *Naomi Brown (Australasian Fire and Emergency Service Authorities Council)* *Prof. John McAneney (Risk Frontiers)* *Prof. Jim Ogloff (Centre for Forensic Behavioural Science, Monash University)* *Richard Woods (ACT Rural Fire Service)*
16:45–17:00	Next steps
17:00	**Close**

Appendix B: List of Participants

John Anderson | University of Newcastle

Heela Arsala | Victorian Bushfires Royal Commission

Tarmi A'Vard | CFA

Russell Baird | Victoria Police

Daniel Baldacchino | Corrections Victoria, Department of Justice

Michelle Ball | Victoria University

Sandra Barber | Tasmania Fire Service

Almut Beringer | Monash Sustainability Institute

David Bethell | CFA

Gwynne Brennan | CFA

David Brown | CFA

Naomi Brown | AFAC

Simon Brown | Corrections Victoria, Department of Justice - Melbourne Assessment Jail

Dorothy Bruck | Victoria University

Rachel Campbell | Forensicare

Warren Christensen | Qld Department of Environment and Resource Management

Philip Chubb | Department of Journalism, Monash University

David Chugg | CFA

Mark Ciantar | Tasmania Fire Service

Alex Conway | Metropolitan Fire Brigade Fire Investigation Unit

Jonathan Corcoran | University of Queensland

Paul Cozens | Curtin University of Technology

Kenneth Dainton | Victoria Police - Mornington Police Station

Ann Davidson | Forensicare

Marco De Sisto | RMIT University

Mairead Dolan | Centre for Forensic Behavioural Science, Monash University

Rebekah Doley | Bond University

Laetitia Du Toit | Corrections Victoria, Department of Justice

Lauren Ducat | Monash University

Darryl Dunbar | NSW Fire Brigades

Michael Evenhuis | Forensic Mental Health Services, Tasmania

Murray Ferguson | Forensicare

Geoff Fletcher | Metropolitan Fire Brigade Fire Investigation Unit

Greg Flynn | HVP Plantations

Kate Ford | WA Department of Corrective Services

Kirsten Forgione | Victoria University

Lisa Forrester | Forensicare

Katarina Fritzon | Bond University

Mark Fullagar | NSW Rural Fire Service

Darryn Gellie | Metropolitan Fire Brigade Fire Investigation Unit

Craig George | Qld Fire & Rescue Service

Amy Gledden | Victoria Police

Dave Griggs | Monash Sustainability Institute

Brett Hagan | NSW Rural Fire Service

Chris Hare | Metropolitan Fire Brigade

Nicole Harvey | CFA

Paul Hollowood | Victoria Police

Chris Jacobsen | CFA

Phil James | RACV Insurance

Warwick Jones | Australian Institute of Criminology

Mike Jordan | Tasmania State Forensic Mental Health Service

Stephen Keating | CFA

Andrew Kerr | Victoria Police

Tahl Kestin | Monash Sustainability Institute

Michael King | Law Faculty, Monash University

Liz Langford | CFA

Gaye Lansdell | Law Faculty, Monash University

Graham Lay | CFA - Fire Investigation

Joseph Lee | Forensicare

Anthea Lemphers | Forensicare

Geoff Leonard | NSW Police Force (Arson Squad)

Christopher Lewis | NSW Fire Brigades

Maurice Lynn | Victoria Police

Philip Masters | Victoria Police - Moorabbin Police

John McAneney | Risk Frontiers

Jennifer McCarthy | Forensicare

The Hon Robert McClelland | Attorney-General for Australia

Kate McDonald | Victoria University

Troy McEwan | Centre for Forensic Behavioural Science, Monash University

Ian Mercer | Qld Police Service

Sharon Merritt | CFA

Damon Muller | Australian National University

Dennis Mulroney | SA Police

Marianne Munro | Victorian Bushfires Royal Commission

Chris Murray | Victoria Police

Vindi Nanayakkara | NSW Community forensic Mental Health Services

Stephen Nangle | Vic Department of Education & Early Childhood Development

David Noble | Origin & Cause Investigations Ltd

Paul Northey | RACV Insurance

Mark O'Donnell | Tasmania Fire Service

James Ogloff | Centre for Forensic Behavioural Science, Monash University

Steven Pearce | NSW Fire Brigades

Colin Peters | Attorney-General's Department

David Pettit | NT Fire and Rescue Service

Richard Puffett | NSW Police Force (Arson Squad)

Geoff Ranzenhofer | CFA

Laurie Ratz | Insurance Council of Australia

Sophie Reeves | Forensicare

Simon Rowntree | Monash Sustainability Institute

Linda Sewell | HVP Plantations

Winand Sitsen | Politie Noord en Oost Gelderland

John Smith | CFA

Andrew Snare | RACV Insurance

Mick Sporton | CFA Boronia

Peter Sprott | Crime Stoppers Victoria

Janet Stanley | Monash Sustainability Institute

Will Story | Attorney-General's Department

Murray Talbot | Metropolitan Fire Brigade

Jackie Tang | WA Department of Corrective Services

Nigel Tapper | Monash University

Peter Taylor | CFA

Philip Taylor | Office of the PVC & President, Monash University Gippsland

Amanda Thomas | Berry Street Victoria

Gavin Thompson | CFA

Adam Tomison | Australian Institute of Criminology

Kimberlee Trent | Attorney-General's Department

Owen Trumper | HVP Plantations

Faye Warren | EW Tipping Foundation

Rebecca Wickes | School of Social Science, University of Queensland

Julie Williams | SA Police

Penny Wolf | CFA

James Wong | CFA Boronia

Mark Woods | Tyler Tipping and Woods

Richard Woods | ACT Rural fire Service

Henry Zeevalkink | Fire Service, City of Apeldoorn, The Netherlands

Appendix C: The Australian Bushfire Arson Prevention Initiative

About the Initiative

The Australian Bushfire Arson Prevention Initiative, which was established in mid-2009 with seed funding from RACV Insurance, aims to advance national action on bushfire arson prevention. The over-arching goal of the Initiative is to reduce the occurrence of bushfire arson of between one-quarter and one-third in five years time. This will be done by initiating and co-ordinating projects to:

- Identify and address gaps in the information needed to better inform legal and policy decisions relating to the management of bushfire arson
- Design and test prevention measures, with a view to facilitating their national roll-out
- Link key national and international stakeholders – including researchers, practitioners, emergency personnel, legal representatives, government and the community

The Initiative is lead jointly by the Monash Sustainability Institute (MSI) and the Monash Centre for Forensic Behavioural Science in Melbourne, Victoria, and Bond University on the Gold Coast, Queensland. The Initiative has a highly valued Management Committee which has developed the program thus far:

- Dr Janet Stanley (Monash Sustainability Institute)
- Professor Mairead Dolan (Centre for Forensic Behavioural Science and the Victorian Institute of Forensic Mental Health - Forensicare)
- Associate Professor Rebekah Doley (Bond University)
- Dr Troy McEwan (Centre for Forensic Behavioural Science and the Victorian Institute of Forensic Mental Health - Forensicare)
- Dr Tahl Kestin (Monash Sustainability Institute)

Initiative structure and activities

The work at the Initiative is divided into three streams:

- Stream 1: Prevention programs: Facilitate the establishment of effective community prevention programs in the major bushfire risk areas.
- Stream 2: Intervention and treatment: Develop best-practice assessment and treatment guidelines for arsonists in community-based and institutional settings that will reduce their risk of recidivistic firesetting.
- Stream 3: Legal response: Facilitate a review of the legal process to identify how the legal response to the crime of arson could be improved.

The Initiative is already undertaking the following projects:

- Review of risk factors for recidivistic firesetting in adults and juveniles.
- Review current treatment and best-practice management of adult arsonists and juveniles who engage in firesetting.
- Review current theoretical explanations for firesetting (with specific reference to bushfire arson).

- A comparative study of the Australian and international legislative responses to bushfire arson.
- An evaluation of a media prevention approach.

Future development

The ideas shared in the symposium will provide the basis for the setting of Initiative goals and structuring planning over the next five years. It is intended that these goals will be reviewed annually after meeting with national agency representatives. The Initiative hopes to work in collaboration with other agencies to facilitate and promote the prevention approach supported in the symposium.

Further information:

The program management office of the Initiative is based at MSI, in the Clayton campus of Monash University in Melbourne, Australia. For further information see our website:

http://www.monash.edu/research/sustainability-institute/bushfire-arson/